
MARCH OF INDUSTRY

NOTE

Inaccurate information regarding historical wine industry facts has been noted by staff members. All material should be checked with publicity department before using.

A PIONEER OF INDUSTRY


An outstanding figure among the pioneers of industry in California is George Chaffey. To the natural endowment of the vision and faith of an empire builder, Mr. Chaffey added technical knowledge of an engineer supplemented with rare skill and judgment in hydraulics. It was these qualifications which enabled him to achieve fame in the reclamation of desert wastes on two continents—America and Australia.

Mr. Chaffey's first achievements after arrival in California in the early '80's were the founding of the towns of Etiwanda and Ontario, and establishing in the latter community a college bearing his name that has become a flourishing institution. Here was made also the first successful experiment in Western America to combine hydro-electric development with irrigation.

Then followed years of notable work in the reclamation of desert lands in Australia after which Mr. Chaffey returned to California to achieve the crowning work of his life—bringing the water of the Colorado River to the Imperial Valley and transforming that broad expanse of barren desert into what is probably the most productive region in America. But for Mr. Chaffey's vision, ability and energy the accomplishment of this great enterprise might have been delayed for a generation.

[Signature in facsimile]

George Chaffey



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FACSIMILE AUTOGRAPHS
of CALIFORNIA PIONEERS

Covered Wagon Babies

Born on the Trail in '48, '49, and the '50's

J. Marion Eads

John T. Ralston

Charles H. Bell

William B. Hyde

Mrs Emeline Wilson

William E. Wallis

John Gossman

March of Industry



MARCH OF INDUSTRY

By Robert Glass Cleland

Author of "*Pathfinders*"; "*History of California, American Period*"

and

Osgood Hardy

Authority on American History and Trade



of the series
CALIFORNIA

Edited by
John Russell McCarthy

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" . . . a good land, a land of brooks of water, of fountains and springs, flowing forth in valleys and hills; a land of wheat and barley, and vines and fig-trees and pomegranates; a land of olive-trees and honey; a land wherein thou shalt eat bread without scarceness, thou shalt not lack anything in it;"

Deuteronomy 8: Verses 7-10.

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PREFACE

This volume deals with the material progress of California. It seeks to describe that progress as accurately and dispassionately as possible, and to avoid loose generalizations and wilful exaggeration. It is not designed to serve as a handbook for the sale of California real estate. The size of the state, its rich and varied resources, and the unusual lines along which its economic development has proceeded, eminently justify an authentic study of this kind. In the transformation of any region from a wilderness to an empire—in the coming of settlers, the planting of fields, the opening of mines, the felling of forests, the building of cities, the operation of factories, the interplay of commerce, the growth of population—there is not only fascination and human interest; there is also the most genuine stuff of which history can be made. This volume contains such essential material.

Inasmuch, however, as certain fundamental subjects such as transportation, gold mining and real estate development, have been included in other volumes of this series, and are not here touched upon, the book cannot be considered in any way a complete economic history of the state. It has also been difficult within the limits fixed by the publishers to include all of the material desired. This limitation has been particularly felt in the use of charts, maps and similar graphic supplements to the narrative.

As in the other volumes of the series, the use of footnotes has been avoided. The inclusion of a large number of tables in the body of the text also appeared undesirable, and these consequently have been confined almost wholly to the Appendix. So far as possible the statistics cited, whether in the body of the text or in the tables, have been taken from official sources. They are as accurate as

can be obtained, but in the mass of figures used doubtless some errors will be discovered.

In conclusion the authors desire to acknowledge their indebtedness for assistance in the collection of the material used in the volume to a number of individuals and organizations. Chief among these are various graduate students who have carried out specific studies in the field of California history at Occidental College; the Los Angeles Chamber of Commerce; the California Development Association; the Los Angeles Chamber of Mines and Oil; the Publicity Department of the Southern California Edison Company; the Bureau of Power and Light of the City of Los Angeles; the Los Angeles Public Library; and the Pasadena Public Library.

ROBERT G. CLELAND.
OSGOOD HARDY.

Los Angeles, California, 1929.



FAYER



MARCH OF INDUSTRY

CHAPTER I

A Neglected Country

THE ECONOMIC history of California from 1769, when it was first settled by the Spaniards, to the year 1848, when it passed into the hands of the United States, is the history of a land lying on the extreme frontier, almost wholly neglected by the mother country, cut off from all but the most casual contacts with the outside world, and sparsely inhabited by an unambitious, pastoral people who were seemingly so indifferent to all material progress and so unmindful of the vast economic opportunities which surrounded them on every hand, that a famous English traveler who visited the coast in 1841 in a pardonable spirit of irritation could exclaim, "In California nature does everything and man does nothing." The economic history of such a frontier land in control of such a people necessarily must run along very simple lines.

The occupation of California, as in the case of all the northern provinces of New Spain, was effected by means of three clearly defined institutions which to a great degree made possible the phenomenal expansion of the Spanish Empire in North America and contributed immea-



surably to the settlement and defense of its far-reaching wilderness frontier. These institutions were the presidio or military establishment, the pueblo or colonist settlement, and the mission. In California, at the close of the eighteenth century, there were four of these presidios; three pueblos, in which lived about one hundred colonist families; and eighteen Franciscan missions. The number of these last named institutions was later increased to twenty-one.

For more than fifty years after the first Spanish settlement was established the missions constituted the center of the economic life of the province. The reasons for this were obvious. In the first place, to succeed in its primary purpose of Christianizing the Indians, a mission must be prepared not only to sustain the handful of friars connected with it, but also to feed, clothe and house a great multitude of natives who were induced or forced to live within the shadow of its walls where they could be instructed in the rudiments of the Faith and made to conform to the teachings and discipline of the Church. As many as two or three thousand Indians were thus sometimes dependent for food and every other necessity upon a single mission, and if the mission could not supply these things then its whole program failed and its usefulness was gone. The California mission of the Spanish-Mexican period in many of its essential economic features was indeed an interesting counterpart of the English manor of the eleventh and twelfth centuries, and like the manorial community each mission found it necessary to make itself almost completely self-sustaining.

In the second place, the Franciscan friars, particularly such men as Serra, Lasuén and the like, who inaugurated the mission system in California and founded most of the individual missions, were men of keen foresight, tireless energy, great versatility and practical ability. They were



not only versed in the ritual and doctrine of the Church, but they were also skilled artisans, practical stock breeders, trained agriculturists, and gifted executives. That a certain amount of genuine economic progress was made by early Spanish-California, despite the handicap of isolation and the limitation in capacity and energy of its inhabitants, was due in large measure to the zeal and ability of these great pioneer missionary leaders.

A third reason for the virtual monopoly which the missions held in early California economic life was the fact that they not only controlled through the sanction and favor of the crown almost limitless areas of the most desirable land in the province, but that they also possessed an abundant labor supply in the multitude of Indians whom they gathered around them and over whom they exercised an authority that was almost absolute. Most of these California Indians, it is true, belonged to an exceedingly low order of the human race, living when the Spaniards found them almost entirely upon acorns, insects and fish; but by patience, example and discipline the missionaries within a generation had succeeded not only in training their charges to carry on the simple pastoral and agricultural activities of the time, but also in developing among them a crude but reasonably effective industrial life to supply the essential needs of the mission communities. The conditions under which the mission Indians worked were not particularly burdensome, except as all enforced labor may be so considered, for they were given a vast deal more to eat than they had ever enjoyed in their savage state, they were housed under better conditions, and they worked only from about two hours after sunrise until noon and from two o'clock in the afternoon to four or five. Holidays and Saints' days when no work was done also frequently intervened.

"Each fully developed mission," writes Professor Her-

bert E. Bolton in describing the manifold economic activities of these institutions, "was a great industrial school, of which the largest, as in California, sometimes managed more than 2,000 Indians. There were weaving rooms, blacksmith shop, tannery, wine press, and warehouses; there were irrigating ditches, vegetable gardens, and grain fields; and on the ranges roamed thousands of horses, cattle, sheep, and goats. Training in the care of fields and stock not only made the neophytes self-supporting, but afforded the discipline necessary for the rudiments of civilized life."

A similar but somewhat more detailed account of the mission's agricultural and industrial activities is given by Engelhardt, in his *Missions and Missionaries of California*. "Many of the neophytes," he says, "were set to work at the various trades, such as the needs of the community demanded. Thus in the course of time we find them making bricks, tiles and pottery, laying brick, doing carpentry and mason work, making shoes, saddles, hats, clothes, candles, soap, tanning hides, combing and spinning wool, melting tallow, shearing sheep, blacksmithing, etc. One of the chief occupations was the weaving of coarse cloth and blankets from the wool of their own sheep. The women and girls would spin, sew, grind corn, and attend to household duties. Even the children were employed to chase away birds from the orchards and vineyards or to do the chores of which they were capable."

Many accounts of individual missions, confirming the general descriptions given by Bolton and Engelhardt, have been left by the travelers in California during this period of mission supremacy. One of the most satisfactory of these is the description of the Mission of San Luís Rey contained in a volume called *Life in California* by Alfred A. Robinson who visited the mission in 1829.

"At this time," he says, "its population was about three



thousand Indians who were all employed in various occupations. Some were engaged in agriculture, while others attended to the management of over sixty thousand head of cattle. Many were carpenters, masons, coopers, saddlers, shoemakers, weavers, etc., while the females were employed in spinning and preparing wool for their looms, which produced a sufficiency of blankets for their yearly consumption. Thus every one had his particular vocation, and each department its official superintendant or *alcalde*; these were subject to the supervision of one or more Spanish *mayordomos*, who were appointed by the missionary father, and consequently under his immediate direction.

“The building occupies a large square, of at least eighty or ninety yards each side; forming an extensive area, in the center of which a fountain continually supplies the establishment with pure water.

“The fruit is protected by thirty-two arches, ornamented with lattice railings, which, together with the fine appearance of the church on the right, presents an attractive view to the traveller: the interior is divided into apartments for the missionary and *mayordomo*, store-rooms, workshops, hospitals, rooms for unmarried males and females, while near at hand is a range of buildings tenanted by the families of the superintendants. There is also a guard house, where were stationed some ten or a dozen soldiers, and in the rear spacious granaries stored with an abundance of wheat, corn, beans, peas, etc., also large enclosures for wagons, carts and the implements of agriculture. In the interior might be seen the various trades at work, presenting a scene not dissimilar to some of the working departments of our state prisons. Adjoining are two large gardens, which supply the table with fruit and vegetables, and two or three ‘*ranchos*’ or farms are situated from five to eight leagues distant, where the

Indians are employed in cultivation and domesticating cattle."

During this period of mission supremacy, and indeed throughout the whole of the Spanish-Mexican regime, California was to all intents and purposes the land of a single occupation—stock raising. This industry indeed not only constituted the chief source of the wealth of the province but also determined to a very great degree the customs, mode of life, and social institutions of its people. From the sale of hides and tallow to foreign vessels the Californians obtained nearly all of the manufactured articles, the finer grades of wearing apparel, and most of the other luxuries which they themselves could not produce. Government revenues also came almost entirely from the duties levied directly or indirectly on this trade; and the whole land-holding system which constituted the social basis of the province was likewise conditional upon it. The trade has been described so frequently and in such minute detail in other volumes that only a summary of its chief features will here be required.

The California cattle were descended from the two or three hundred animals which the early expeditions brought overland from Mexico and possessed accordingly the characteristic features and appearance of the Mexican range stock. Natural conditions made California almost perfect as a cattle country and the original animals multiplied with such rapidity that there were probably close to 100,000 head in the province before the close of the eighteenth century. No thought was ever given to scientific breeding, to fattening, or to any other method of improving the herds, and under the conditions then existing in California these things would have been only so much wasted and foolish effort if they had been attempted.

"Except in seasons of drought," writes Cleland, "the rains came, the grass grew, and the cattle, running wild

on the range, multiplied and took care of themselves. Only in dry years was there any danger of serious loss, but at such times the herds might suffer severely." Twice each year at great rodeos or round-ups the cattle were brought together in order that the vaqueros might separate the animals belonging to the different owners, brand the calves, and set aside a certain number of steers or bullocks, as they were commonly called in the language of the day, for slaughter. "A round-up of this kind," continues the writer just quoted, "was one of the most picturesque events of early California life. The vast herd of cattle, sometimes half a mile from center to circumference, the thick clouds of dust that rose from thousands of moving feet, the sudden dash after some escaping steer, the surprising feats of horsemanship, which were performed continually by the vaqueros, the bellowing of frightened and maddened bulls, the clash of horns striking horns, the wild shouts and laughter of the cowboys all lent an air of excitement and interest that the printed page can not reproduce."

It is difficult to determine what income was derived by the missions and later by the ranchers from their cattle. The hides and tallow, as already said, were the only marketable products and as these were commonly exchanged for goods at greatly enhanced prices instead of being sold for cash, the problem of estimating the returns received by the Californians from the business becomes as a consequence a much more complicated matter. A careful observer in 1841, however, made the following rough estimate. "The income of every farmer may be pretty accurately ascertained from the number of his cattle. The value of a single animal, without regard to the merely nominal worth of its beef, may average about five dollars, the hide fetching, as already mentioned, two dollars and two or three arrobas of tallow of twenty-five pounds,



each yielding a dollar and a half by the arroba; and as the fourth part of a herd may generally be killed off every year without any improvidence, the farmer's revenue must be, as nearly as possible, a dollar and a quarter a head."

In addition to the cattle, which constituted the basis of the livestock industry in California during the period of Spanish-Mexican rule, vast numbers of horses and tens of thousands of sheep, the wool of which was used for the manufacture of coarse blankets and cloth, also grazed on the limitless ranges from Sonoma to San Diego. Each mission had likewise its vineyards for the making of wine, and its orchards and gardens. Irrigation, which was carried on for generations in Mexico and Spain before the settlement of California, was practiced extensively, particularly under the direction of the mission authorities, some of whom showed surprising skill in this particular type of hydraulic engineering.

Because of the congenial nature of the climate and the fertility of the soil, fruits and vegetables of almost every variety and of superior quality could be grown with a minimum of effort, but almost nothing was done to develop these agricultural possibilities beyond the limited needs of each individual community. Even in this respect, however, credit should be given to the Franciscan missionaries for having introduced into California nearly all of the fruits, such as oranges, grapes, peaches, plums, pears and the like, which today furnish the basis of the state's horticultural industry, and for having also first cultivated here most of the vegetables.

In a measure supplementing the cattle industry, grain, chiefly corn and wheat, was grown in considerable quantity both with and without irrigation. Beans, or frijoles, which with meat and corn-meal constituted almost the exclusive diet of the people, were also produced, relatively

speaking at least, on an extensive scale. The methods used in these farming operations, however, like those still employed in many of the rural districts of Mexico, were exceedingly crude and inefficient. The ground was prepared with a plow made from a "crooked limb of a tree, with a piece of flat iron for a point, and a small tree for a pole." After the seed was sown the field was dragged with a piece of brush or the branch of a tree, in lieu of a harrow. Indian women harvested the ripened grain, plucking it ear by ear and depositing it in wicker baskets carried on their backs.

The threshing of the grain was accomplished in a similarly crude fashion. The methods employed have been pictured by Davis in his *Sixty Years in California* in the following interesting account: "A circular piece of ground, known as hera, containing, say, an acre and a half was enclosed by a fence, smooth on the inside. The ground was prepared by putting water on it, leveling and pounding it until it became firm and hard. A large quantity of grain was then thrown into this circular space, and seventy-five to one hundred mares were turned into the place, with two or three vaqueros mounted on powerful horses, with whips in their hands, who drove the mares round and round the circle. . . .

"When the mares became dizzy from circling round in this way, they were turned and driven in the opposite direction. This was continued actively until the grain was well threshed out. The grain was winnowed in an equally primitive manner, the process requiring a day when a good breeze was blowing. The threshed grain was pushed well to one side of the inclosure by the harvesters, and a good space cleaned off. Then, with large wooden shovels, they took it up and threw it as high as possible against the wind which blew the chaff and straw aside, while the heavier grain fell down on the clean



ground which had been prepared for it. In this way they got it out quite clean, also nice and whole, not broken as it is more or less in passing through a threshing machine. . . . The mares were also used for the threshing of beans by the same process."

Of the rotation of crops or the practice of even the simplest of the improved methods of agriculture then in common use in Europe, the Californians never dreamed, and it would have been "as reasonable to expect that they should adopt such novelties," wrote Forbes, "as that they would the doctrines of Luther or Calvin." Under the primitive methods of cultivation which thus prevailed the potential possibilities of the land were at best only partially realized, but it is authoritatively stated that even under such limitations the yield of corn was frequently a hundred and fiftyfold and of wheat at least a hundredfold, so great was the fertility of the virgin soil.

Accurate figures of crop production in California during this period are impossible to obtain and such as are available are of doubtful value. The following estimate from Forbes' *California*, the first history of the province written in English, will perhaps prove as serviceable, however, as any. According to this writer the total production of wheat in California for the year 1831 was approximately 63,000 bushels; the yield of corn amounted to 27,000 bushels; of beans 4,000 bushels; of barley 18,000 bushels; and of peas, chick-peas, etc., about 2,500 bushels, or a total for the various grains and legumes of approximately 115,000 bushels.

At this time, as already noted, the missions were responsible for the greater part of the agriculture carried on in the province and owned most of the livestock. The following table from Bancroft shows something of their economic importance and the nature of their material possessions:

MARCH OF INDUSTRY

STATISTICS OF 1834

Mission	Date of Foundation	Indians	Horned Cattle	Horses	Sheep Goats and Pigs	Harvest Bushels
San Diego.....	1769	2,500	12,000	1,800	17,000	13,000
San Luis Rey.....	1798	3,500	80,000	10,000	100,000	14,000
San Juan Capistrano..	1776	1,700	70,000	1,900	10,000	10,000
San Gabriel.....	1771	2,700	105,090	20,000	40,000	20,000
San Fernando.....	1797	1,500	14,000	5,000	7,000	8,000
San Buenaventura.....	1782	1,100	4,000	1,000	6,000	3,000
Santa Barbara.....	1786	1,200	5,000	1,200	5,000	3,000
Santa Inés.....	1804	1,300	14,000	1,200	12,000	3,500
Purísima.....	1787	900	15,000	2,000	14,000	6,000
San Luis Obispo.....	1771	1,250	9,000	4,000	7,000	4,000
San Miguel.....	1797	2,000	4,000	2,500	10,000	2,500
San Antonio.....	1771	1,400	12,000	2,000	14,000	3,000
Soledad.....	1791	700	6,000	1,200	7,000	2,500
Carmelo.....	1770	500	3,000	700	7,000	1,500
San Juan Bautista.....	1799	1,450	9,000	1,200	9,000	3,500
Santa Cruz.....	1791	600	8,000	800	10,000	2,500
Santa Clara.....	1777	1,800	13,000	1,200	15,000	6,000
San José.....	1797	2,300	2,400	1,100	19,000	10,000
San Francisco.....	1776	500	5,000	1,600	4,000	2,500
San Rafael.....	1817	1,250	3,000	500	4,500	1,500
Solano.....	1823	1,300	3,000	700	4,000	3,000
Total.....		31,450	396,400	61,600	321,500	123,000

By a decree issued in 1833 the Mexican government, following the plan contemplated by the Spanish crown when its colonial system was originally devised, began the process of secularizing, or apportioning out, the mission lands to private owners. This act, at least in many of its practical effects, proved extremely short-sighted from the standpoint of the province as a whole and nothing short of ruinous to the mission system. As a result, the missions, which up to this time had almost completely dominated every phase of California's economic life, ceased to be of any particular consequence and the province was compelled to rely upon the pueblos and the private ranches for its agricultural and industrial activities.

Some of these great private ranches had already been created before the secularization of the missions, but during the next twelve years many more were carved out of

the expropriated mission lands. Both in their social and economic aspects they constituted, like the missions which they succeeded, another unique feature in California's provincial life. Land at that time was so abundant and so cheap that it had literally almost no monetary value. A grant of thousands of acres could be secured by almost any one who would agree to stock his holdings with cattle and conform to a few simple regulations. Boundaries of such grants were almost always very indefinitely specified and fixed by easily obliterated landmarks. As a consequence the history of California for half a century after the American occupation, as will be shown elsewhere, was marked by litigation, land disputes and often tragic injustice because of these uncertain boundaries.

In many of its economic aspects life on these large California ranches of the pre-American period differed but little from that of the missions. Stock raising was the basic industry, supplemented by the production of a little grain and other simple crops. Only to a very limited degree, however, were the trades and handicrafts developed at the missions continued on the ranches, for most of the skilled Indian workmen returned to their former methods of life with the collapse of the mission system, and there were consequently neither directors nor artisans qualified to carry on the industrial activities so carefully fostered by the Franciscan friars. How complete was the collapse of this system may be seen from the fact that while in 1834 there were over 50,000 Indians attached to the various missions, most of whom were trained in some sort of handicraft, by 1842 this number had dwindled to less than 4,500. The general economic decline which set in after secularization may also be read in the following paragraphs from the pen of Sir George Simpson, Governor General of the Hudson's Bay Company, who visited

California in 1841 in the course of a journey around the world.

"In the missions, there were large flocks of sheep; but now there are scarcely any left, the Hudson's Bay Company having, last spring, experienced great difficulty in collecting about four thousand for its northern settlements.

"In the missions, the wool used to be manufactured into coarse cloth; and it is, in fact, because the Californians are too lazy to weave or spin,—too lazy, I suspect, even to clip and wash the raw material,—that the sheep have been literally destroyed to make more room for the horned cattle.

"In the missions, soap and leather used to be made; but in such vulgar processes the Californians advance no farther than nature herself has advanced before them, excepting to put each animal's tallow in one place, and its hide in another.

"In the missions, the dairy formed a principal object of attention; but now, neither butter nor cheese, nor any preparation of milk whatever, is to be found in the province.

"In the missions, there were annually produced about 80,000 bushels of wheat and maize, the former, and perhaps part of the latter also, being converted into flour; but the present possessors of the soil do so little in the way of tilling the ground, that, when lying at Monterey, we sold to the government some barrels of flour at the famine rate of twenty-eight dollars, or nearly six pounds sterling, a sack,—a price which could not be considered as merely local, for the stuff was intended to victual the same schooner which, on our first arrival, we had seen at anchor in Whales' Harbour.

"In the missions, beef was occasionally cured for exportation; but so miserably is the case now reversed, that,

though meat enough to supply the fleets of England is annually either consumed by fire or left to the carrion birds, yet the authorities purchased from us, along with the flour just mentioned, some salted salmon as indispensable sea-stores for the one paltry vessel which constituted the entire line of battle of the Californian navy.

"In the missions, a great deal of wine was grown, good enough to be sent for sale to Mexico; but, with the exception of what we got at the mission Santa Barbara, the native wine that we tasted was such trash as nothing but politeness could have induced us to swallow."

The Indians who after secularization supplied the labor for the ranchos lived under a system of peonage somewhat similar to that which prevailed in many of the most backward regions of Mexico prior to the Madero revolution. To all intents and purposes they were bound to the service of the proprietor as long as he cared to hold them. Apparently they did not suffer to any degree from overwork, but they were exceedingly primitive and debased and virtually nothing was done by the rancheros to lift them out of the degradation in which they lived. "Vallejo had land without limit," writes Bancroft of one of the most important of these great land barons. "Nominally he held thirty-three leagues, equal to 146,000 acres, with 400 to 500 acres under cultivation, the rest being used for pasturage. Of stock he had from 12,000 to 15,000 head of neat cattle, 7,000 or 8,000 head of horses and 2,000 to 3,000 sheep. He had also 300 working men, with their usual proportion of females and children, all kept in nearly a naked state, poorly fed, and never paid." Sir George Simpson, quoted above, painted a still more wretched picture of these unfortunates.

"Though many of them are well formed," he says, "and well grown, yet every face bears the impress of poverty and wretchedness; and they are, moreover, a prey to sev-

eral malignant diseases, among which an hereditary syphilis ranks as the predominant scourge alike of old and young. They are badly clothed, badly lodged, and badly fed. As to clothing, they are pretty nearly in a state of nature; as to lodging, their hovels are made of boughs, wattled with bulrushes, in the form of beehives, with a hole in the top for a chimney, and with two holes at the bottom, towards the northwest and the southeast, so as to enable the poor creatures, by closing them in turns, to exclude both the prevailing winds; and as to food, they eat the worst bullocks' worst joints, with bread of acorns and chestnuts, which are most laboriously and carefully prepared by pounding, and rinsing, and grinding. Though not so recognized by the law, yet they are thralls in all but the name; while, borne to the earth by the toils of civilization, superadded to the privations of savage life, they vegetate rather than live, without the wish to enjoy their former pastimes, or the skill to resume their former avocations."

During this Spanish-Mexican period the trade of California, like every other phase of its economic activities, was extremely simple in its character. For a quarter of a century after the founding of San Diego, the Californians had virtually no commercial contact with the outside world. For a time they were furnished with food, clothing and other necessities by the overland trains from Lower California or Sonora, and especially by the supply ships which the Spanish government sent regularly to California from the harbor of San Blas in what is now the Mexican state of Nayarit. At rare intervals a few European vessels, such as those commanded by Vancouver or La Pérouse, would touch at two or three of the chief ports and take on a few fresh supplies. But otherwise the province lived out its simple life undisturbed in its almost perfect isolation.

About 1800, however, or a little before, a new factor began to make its influence felt in the life of the Californians. This was the appearance of foreign vessels, especially those from New England, in search of furs along the California coast. The development of this trade, its characteristic features, and the part it played both in the economic and international aspects of California history have elsewhere been described and need not be dwelt upon at this time. It is sufficient to say that slight as this trade was when measured by ordinary standards, its economic importance to the Californians was out of all proportion to its actual value and its political consequences were of great and permanent significance. The foreign whaling vessels which came into California waters in the early years of the nineteenth century to some degree supplemented the trade already begun by the fur hunters, but it was not until 1822 that the province enjoyed any real semblance of an organized form of commerce.

One reason for this commercial backwardness was doubtless the severe restrictions which the Spanish crown imposed on the trade of all its colonies—a policy aptly described by Humboldt when he said that “the supplying of a great kingdom was carried on like the provisioning of a blockaded fortress”—but at least an equally important reason was the dearth of commodities produced in California which could serve as the basis of any important trade, and the very limited purchasing power of the inhabitants and their extremely simple wants.

From 1822 onward, however, with the beginning of the systematic collection of hides for the New England market by the Boston firm of Bryant and Sturgis, California found an outlet for the only commodity her inhabitants were then capable of producing on a true commercial scale. Here again, because it has been done so often elsewhere, it is not necessary to describe in detail

the characteristic features of this highly important and equally picturesque trade. Earlier in this chapter it has been pointed out that the New England trade not only furnished a market for the hides and tallow of the California cattle, but also supplied the inhabitants with a great variety of luxuries and necessities which they themselves could not produce, and in addition constituted almost the only source of revenue of the provincial treasury.

The government regulations of the trade were nominally very strict, but many ways were found to evade the more annoying provisions of the law, and as in all such cases the incidence of the cost entailed by these restrictions was generally shifted from the New England merchant to the California purchaser. Duties ranged from 20 per cent to 100 per cent and goods commonly sold at an advance of 300 per cent over the original cost. Government revenue from the trade varied greatly, ranging, at least according to the figures available, from \$8,000 in 1834 to \$140,000 in 1845. The trade was carried on entirely on credit and constituted in fact a true system of barter in which money almost never figured. Indeed, the lack of money in the province was so extremely marked during this period that hides, which the sailors called "California bank notes," were generally used in its stead as the common medium of exchange. A counterpart to this custom was of course found in the use of beaver skins throughout the mountains, in the days of the fur trade, but in California even the smallest of retail purchases was made with hides instead of cash, and the practice was carried so far "that in order to purchase a bit (12 ½ cents) or two bits' worth of sugar or any other article, the purchaser dragged the hide along with him to the store. A hide was normally worth \$1.50 in silver or \$2 in goods."

Though the trade was so largely done on credit, the

New England merchant, down at least almost to the time of the American occupation, almost never suffered from unpaid debts. William Heath Davis, who for many years was engaged in business on the coast, paid this tribute to the integrity of the California ranchers: "The merchants sold to the rancheros and other Californian's whatever goods they wanted, to any reasonable amount, and gave them credit from one killing to another. I have never known of a single instance in which a note or other written obligation was required of them. At the time of purchasing they were furnished with bills of the goods, which were charged in the account books, and in all my intercourse and experience in trade with them extending over many years, I never knew a case of dishonesty on their part."

The most satisfactory account of the hide and tallow trade as a whole is contained in Richard Henry Dana's *Two Years Before the Mast*. To conclude this brief summary of it, therefore, one can do no better than to include a brief extract, quoted also in Cleland's *History of California*, from Dana's great classic which vividly portrays certain of the most characteristic features of the business.

"The trade-room [of the vessel]," wrote Dana, "was fitted up in the steerage, and furnished out with the lighter goods and with specimens of the rest of the cargo. . . . For a week or ten days, all was life on board. The people came off to look and buy—men, women, and children; and we were continually going in the boats, carrying goods and passengers,—for they have no boats of their own. Everything must dress itself and come aboard and see the new vessel, if it were only to buy a paper of pins. The agent or his clerk managed the sales, while we were busy in the hold or in the boats."

"Our cargo was an assorted one; that is, it consisted of everything under the sun. We had spirits of all kinds

(sold by the cask), teas, coffees, sugars, spices, raisins, molasses, hardware, crockeryware, tinware, cutlery, clothing of all kinds, boots and shoes from Lynn, calicoes and cotton from Lowell, crapes, silks; also, shawls, scarfs, necklaces, jewelry and combs, for the ladies; and in fact, everything that can be imagined, from Chinese fireworks to English cart-wheels—of which we had a dozen pair with their iron rims on.”

Supplementing the articles carried by the New England vessels were goods brought in from Europe, China and Mexico. According to the *Memoirs of a Merchant*, translated and edited by Nellie Van de Grift Sánchez, “The Mexican goods which were brought to California consisted of: Sarapes, fancy suits, embroidered with gold and silver thread, with silver or copper buttons, and with silver and gold braid on the breeches; shoes for men and women of satin, deerskin and cotton, country and beaver hats; rebozos of silk and cotton, some of which brought in California the price of \$150, costing in Mexico \$15 or \$16, and for which there was a large trade, for the women used no other cloak; cowhide boots; riding saddles, some very cheap, and others costly. Some of them were sold in California for as much as \$300 each and many of these were sold, for all the rich rancheros wanted them.

“Other commodities were wool protectors, that is, goat skins made to cover the legs while riding horseback in the rain, and many other manufactured articles of minor importance.

“Among the principal articles for consumption in California which came from Mexico in large quantities were sugar, panocha, and brandy made of sugar cane. The foreign goods were French and English calicoes, white muslin, percale, etc.”

“Californians,” says Bancroft, speaking of the same subject, “would pay for shoes \$4, boots \$15, vermicelli \$10 a



box, woolen socks \$10 a dozen, silk stockings \$2.50 to \$5 a pair, linen thread \$4 a pound, silk handkerchiefs \$2 each, sugar \$20 per 100 pounds, nails 37 cents per pound, calico 50 cents a yard, brown cotton 37 cents a yard, not to mention a rebozo at \$150, a serape of Saltille at \$200 to \$300, a saddle at \$300, etc."

Though the cost of imported commodities usually ranged extremely high, the price of domestic products was correspondingly low. Larkin wrote in 1846 that two-year-old cows could be bought for \$4 or \$5 each, bulls for \$2 or \$3, sheep for \$2, and mares for \$5 or \$6. Corn or peas cost about 70 cents a bushel, beans \$1.00, and wheat \$1.20. It was estimated that a laborer could be maintained for about 27 cents a day; and wages, if paid at all on the ranches, ranged from \$3 to \$10 a month. Carpenters received from \$8 to \$12 a month and school teachers, whose number was woefully small, were supposed to receive salaries ranging from \$125 per annum in 1795 to a maximum of \$1,200 in 1844. Because of the scarcity of money, interest rates were commonly not less than six per cent a month.

Shortly after 1840 California began to witness the faint beginnings of a new economic day. The cattle industry, demoralized by the secularization of the missions in 1834, had been reestablished on a scale larger even than before by the development of the private ranches. Of these there were seven hundred or more in 1846, while in 1830 there had been only fifty and in 1795 not more than five or six. Supplementing the trade along the coast, a regular overland commerce had also been established over the Old Spanish Trail, following the routes opened by the fur trappers, between New Mexico and Los Angeles. This trade was annually bringing into California silver, blankets and other articles from Mexico and various American commodities freighted to Santa Fé by the merchant caravans from St. Louis.

Most significant of all of the factors, however, which were giving a new impetus to California's economic development after 1840 was the steady increase in the number of foreigners coming into the province for permanent settlement. Most of these were Americans. Some were brought to California through their participation in the hide and tallow trade. Some came originally as fur traders, especially over the southern routes from New Mexico, and marrying into the wealthier California families became large land holders and influential citizens. Especially important, however, after the arrival of the Bidwell Company of 1841, was the steady increase of organized overland immigration from the frontier settlements of the Mississippi Valley. The exact number of Americans and Europeans resident in California prior to 1846 is impossible to determine, but a reasonably accurate estimate fixes the number at 13 in 1820, 150 in 1830, 300 in 1835, about 400 in 1840 and nearly 700 in 1845.

Whether such figures are accurate or not, however, is of little consequence. The significant fact remains that these foreign residents introduced into the placid, unambitious life of the Californians a new and revolutionary spirit. They saw the vast resources of the province lying idle and with characteristic energy set themselves to develop the untouched riches of the land. To the task they brought varied experience and training and true Yankee ingenuity and initiative. To them was due the restoration of the simple industrial life so largely destroyed by the downfall of the missions. They built water mills for grinding grain in place of the household metates used by the Californians or the crude mule and ox-power mills similar to the quartz mills or arastres of old Mexico. They erected sawmills, also run by water power, and in 1843, an American trapper named Stephen Smith set up at



Bodega the first steam grist and sawmill operated in California.

Such men as Thomas O. Larkin at Monterey, William Wolfskill, and Don Abel Stearns of Los Angeles, also brought new ideas to bear upon trade and agriculture and before long came to be the dominant commercial and financial figures in the province, and in the Sacramento Valley the Swiss emigrant, John A. Sutter, created an establishment that was at once a well ordered military post, an active industrial center, and the seat of the most ambitious and varied agricultural development in California.

Of Sutter's large-scale and numerous economic undertakings one author writes: "He planted large areas to wheat; built a flour mill; diverted water from the American River for irrigation purposes; grazed large herds of cattle and horses; sent hunters into the mountains and along the rivers for furs and elk skins; set up a distillery; began the weaving of coarse woollen blankets; ran a launch regularly for freight and passengers between his settlement and San Francisco Bay; employed nearly all foreigners who came to him for work, whether he needed them or not; trained the Indians to useful occupations; at times chastised the thieving, war-inclined tribes which the Spanish-Californians could not subdue; administered justice as an official of the provincial government; and, in short, made his colony the nucleus of all activity, whether political or economic, in what was then the only settled portion of interior California."

In part as a result of the new influences enumerated above, California on the eve of the American occupation in 1846 was exporting, according to the report of Thomas O. Larkin who was then United States Consul for the province, something like 80,000 hides; 60,000 arrobas, or 1,500,000 pounds of tallow; 10,000 fanegas, or 25,000 bushels of wheat; 1,000,000 feet of lumber, besides some

staves and shingles; \$10,000 worth of soap; \$20,000 worth of beaver and other skins; 1,000 barrels of brandy; and (perhaps most interesting of all) some 200 ounces of gold, worth \$17 an ounce!

These figures, together with the statement already made of the great increase in the number of ranches and in the influx of foreign immigration, indicate the beginning of a new period in the history of California's economic development. What this development might have been, what forms it might have taken, or to what extent it might have proceeded under normal conditions, are matters of interesting speculation but of no practical concern. For the natural course of this development was abruptly and permanently changed by two events which occurred almost simultaneously. One of these was the passing of the province into the hands of the United States; the other was the discovery of gold. The following chapter will seek to show the economic development of California in the decade immediately following these two revolutionary occurrences.

Chapter II



CHAPTER II

A Decade of Transition and Experiment

THE TERRITORY called California which passed into the possession of the United States in 1848 is generally spoken of as a Mexican province. But it was more than a province. It was an empire—vast in extent, rich in undeveloped wealth and blessed in innumerable ways with Nature's infinite favor. Under Spain and Mexico the boundaries of this empire were but vaguely drawn; not more than a small fraction of it, a narrow strip lying along the coast, was ever settled; and much of it was virtually unexplored. When the new possessors, therefore, came to erect the territory into an American state they were perplexed to know how to define its limits and only vaguely aware of the great extent and variety of its resources. They were men, however, who were deeply imbued with the spirit of the West and who had become accustomed to wide horizons. Accordingly they gave to the boundaries of the new state a largeness and sweep that could easily have embraced half a dozen European kingdoms and that made it, next to Texas, the largest state in the Union.

The California of today extends from latitude $32^{\circ} 34'$ to latitude $40^{\circ} 25'$ —an average length of about 780 miles. Its width varies from 150 to 350 miles and its total area is

158,297 square miles or 99,898,880 acres of land surface. The state is thus almost as large as New York, Pennsylvania and the six New England states combined. Or, to use another comparison, three countries the size of England could be carved out of California, leaving nearly 6,000 square miles of territory still to spare. The whole of Great Britain and Ireland could be swallowed up within the state and still an area larger than another Ireland would be left untouched. Japan could be included within its limits and 10,000 square miles would still be unaccounted for. These comparisons are worthy of consideration when one attempts to forecast the future of California, either in terms of population or of material development.

For political purposes the state is divided into 58 counties. The largest of these—the county of San Bernardino—covers an area of 20,175 square miles. It is the largest county in the United States and embraces more territory than any one of the eight smallest states of the Union.

Of the 99,898,880 acres included in California, sixty per cent is mountain land, only a small portion of which is susceptible of cultivation. But these mountainous regions, beside their scenic and recreational value, contain a large part of California's richest assets in the form of forests, minerals, and drainage basins which supply water for irrigation and hydro-electric power. The timber lands, including the areas already cut-over, contain some 19,195,000 acres, in addition to which there are about 10,650,000 acres of chaparral and brush lands valuable chiefly for grazing purposes and as watersheds. The following table shows the classifications and amount of timber in the state in 1925:

MARCH OF INDUSTRY

ESTIMATED TIMBER STAND—CALIFORNIA—1925

(M Feet—B. M.)

(Report—Senate Committee on Reforestation)

Region	Private	State	Federal	Total
<i>Pine Region</i>				
Western Yellow Pine..	46,000,000	76,000	31,000,000	77,076,000
Sugar Pine.....	20,200,000	28,000	11,700,000	31,928,000
Douglas Fir.....	16,900,000	39,000	16,500,000	33,439,000
White Fir.....	18,100,000	34,000	14,500,000	32,634,000
California Red Fir.....	4,700,000	28,000	12,900,000	17,628,000
Incense Cedar.....	4,200,000	9,000	4,400,000	8,609,000
Miscellaneous.....	1,500,000	16,000	5,400,000	6,916,000
Total—Pine Region	111,600,000	230,000	96,500,000	208,330,000
<i>Redwood Region—</i>				
Redwood.....	70,000,000	-----	-----	70,000,000
Douglas Fir.....	5,675,000	-----	-----	5,675,000
Miscellaneous.....	500,000	-----	-----	500,000
Total—Redwood Region	76,175,000	-----	-----	76,175,000
Grand Total.....	187,775,000	230,000	96,500,000	284,505,000

From Economic Resources and Extractive Industries of California.

Mineral resources have given California, first through the production of gold and later through the development of petroleum, a unique and world-wide fame. Gold and petroleum, however, by no means represent the total mineral resources of the state. So abundant and varied are the latter, in fact, that fifty-eight metals and non-metals are included in the list of California's commercial products and no county in the state is without mineral deposits of some kind in commercial quantities.

The agricultural development of California, which has added more than any other factor to the state's economic progress, will be described in detail later on. It is sufficient here to note the well-established and widely advertised fact that climatic and soil conditions have given California agricultural possibilities of almost unrivaled character and that aside from a few products which can be grown profitably only in the tropics there is almost no fruit, grain or vegetable which cannot be produced commercially in the state. The land available for agriculture

is estimated at 23,912,100 acres, but this amount may be increased to some degree through the further reclamation of swamp lands by drainage and of desert lands by irrigation. Of the total cultivable area, 19,741,200 acres are classified as valley lands; 2,045,100 acres as plains; and 2,125,000 acres as foothills.

The climate of California, which has long enjoyed a wide-spread and distinctive reputation, is largely responsible both for the state's agricultural preeminence and for its growth in population. Naturally a region that extends through such a wide range of latitude and embraces both the highest point (Mt. Whitney, altitude 14,501 feet) and the lowest point in the United States (Death Valley, 276 feet below sea-level), has a wide variety of climate. The average annual snowfall in the higher altitudes of the Sierra Nevada is over 400 inches and in 1906-07 at Tamarack in Alpine County, near the Oregon line, the fall came to 884 inches, the greatest amount ever recorded for a single season anywhere in the United States. Death Valley, on the other hand, lying in the southern part of the state east of the Sierra is virtually uninhabitable from June to September because of the heat. During these months the thermometer almost never goes below 100° Fahrenheit in the daytime and on July 10, 1913, it reached the figure of 134°, the highest natural shade temperature, so far as can be determined, ever recorded anywhere on the earth's surface with a standard thermometer in the open air under approved methods of exposure.

The average annual rainfall over the greater part of northwestern California is from forty to eighty inches, and a station in Del Norte County once recorded a total of 139.20 inches for a single season. But the rainfall in much of the desert areas in southeastern California and in Imperial Valley seldom amounts to more than three or four inches; and in parts of San Bernardino County no mea-

surable rain fell from October 3, 1912, to November 8, 1914. Also at Indio in Riverside County no rain fell from November, 1893, to January, 1895. July and August are usually cold and foggy in San Francisco, but a few miles away in the Sacramento and San Joaquin valleys the same months are excessively hot and dry, with temperatures running sometimes for days at a time well over 100°.

These illustrations are cited merely to show the wide extremes prevailing in the climatic conditions of various sections of California. The state as a whole, however, possesses certain definite climatic characteristics which one generally has in mind when he uses the term, "California climate." These characteristics were so clearly pointed out by John S. Hittell more than a half a century ago that his description may profitably be quoted here.

"The climate of California is unlike that of any other country, and particularly dissimilar to that of the American states east of the Rocky Mountains. In general character it resembles the climate of Western Europe. Its chief peculiarities, as distinguished from the Eastern states, are that the winters are warmer; the summers—especially at night—are cooler; the changes from heat to cold not so great nor so frequent; the quantity of rain less, and confined principally to the winter and spring months; the atmosphere drier; the cloudy days fewer; thunder, lightning, hail, snow and ice, and the aurora borealis rarer; the winds more regular—blowing from the north for fair weather and from the south for storms; and earthquakes more frequent.

"The state reaches through nine and a quarter degrees of latitude, from 32° 45' to 42°, San Diego being as far south as Charleston, and Crescent City as far north as Providence. Much of the Golden State has the winter of South Carolina, and summer of Rhode Island. . . .

"The state, indeed, has many climates: one for the

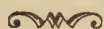
western slope of the Coast range between Point Concepcion and Cape Mendocino; another for the low land of the Sacramento Basin; another for the Sierra Nevada and Klamath Basin; another for the Great Basin of Utah; another for the coast south of Point Concepcion; and still another for the Colorado Desert.

"The causes of these peculiarities of climate are chiefly to be found in the position of the country—a narrow strip on the western side of the continent, bounded on the east by a high range of mountains that shuts the coast off from all the influences of the interior; bordering on the wide Pacific Ocean, washed by a warm current flowing across from the China Sea; with a shore line that runs nearly north and south, and is exposed in all its length to the strong winds constantly blowing southeastward over the ocean."

The natural resources and climatic advantages briefly summarized in the preceding pages of this chapter were of course the heritage of California from immemorial time. Prior to 1848, however, as has already been shown, little effective effort was made to develop the riches of forest, mine, or soil which the land possessed. But with the acquisition of California by the United States, the discovery of gold, and the overwhelming rush of population to the region, all this was changed.

For the first few years gold mining of course constituted the chief business of the newly arrived inhabitants and for at least a decade the wealth which came out of gravel beds and gulches and lodes of the Sierra Nevada constituted the life-blood of California's economic life. Nor did its effect cease here, but it went abroad to the money markets of Europe and the United States and wrought a profound change in the currency standards and price-levels of the world. The account of the gold mining era, however, has been given in *Gold Days*, by Owen C. Coy, and





cannot be entered into here. It is only necessary to point out that a few years after Marshall's discovery, when the fever of the gold rush had begun to subside, California entered upon a period lasting a decade or more of varied economic adjustment and adaptation. It is the purpose of the remainder of this chapter to describe the general features of the material development of these experimental years.

An economic survey of California in 1850 would have shown three distinct divisions of the state. The first of these was the mining regions; the second was the cities of Northern California, especially San Francisco, Stockton and Sacramento; and the third was the stock-raising sections, embracing especially the so-called "cow counties" lying between San Diego and Monterey. For an understanding of the tremendous economic revolution which California experienced after 1849 it is necessary to remember that the non-Indian population of the province in 1848 was not much over 15,000, or one person to every ten square miles; that agricultural development was still almost exclusively in the pastoral stage; that in any true sense there was no financial or industrial life whatever; and that inland transportation, except of the most local character, was limited to pack-train and saddle-horse. In the midst of this primitive, unambitious, thinly populated Arcady almost without warning appeared a vast horde of strangers from nearly every quarter of the globe. They were greedy for wealth, fiercely energetic, trained in handicrafts, trade, industry, finance, and agriculture and to all intents and purposes their coming marked the beginning of California's modern economic life.

For some years after 1848 mining was the chief occupation of this horde of fortune-seekers, but it was eventually recognized that the more permanent wealth of California lay in her agricultural and industrial possibilities rather

than in her mines. As a contemporary writer of foresight pointed out, "An experience of eight years, during which we have dug and shipped so enormous an amount of gold, out of which we have saved so little, ought to convince us that we shall never get rich by this process. In this respect we furnish the most striking illustration that history records, of how little the precious metals add to the wealth of people in the absence of agricultural and mechanical industry. In my opinion it is time we had begun to feed and clothe ourselves and thus keep our gold at home to enable us to build better houses, extend and establish our farms, erect churches and colleges, construct railroads and build clipper ships and ocean steamers. In these things do true national wealth and individual prosperity consist."

In the two years from 1848 to 1850 the population of California rose from 15,000 to nearly 93,000 and by 1860 it was 380,000. This phenomenal and rapid increase of population gave the first great impetus to the development of California's agriculture and manufacturing. In the earlier years of the decade, fully sixty per cent of the state's inhabitants were engaged in mining. This population naturally furnished an urgent market, and one abundantly supplied with funds, for all the cattle, grain, and other foodstuffs the agricultural sections could produce. The cattle growers profited naturally the first of all. The prevailing price for cattle in 1846, as was shown in the preceding chapter, was between \$4 and \$6 a head. At the close of 1849 cattle were selling in Sacramento for \$300, or even \$500, each! And even as late as 1851 they were bringing from \$50 to \$150. This phenomenal increase in values brought undreamed of riches to the native Californians who still retained their large land holdings; but much of this suddenly acquired wealth, in keeping with

the practice usually followed under such conditions, was dissipated as quickly as it had been acquired.

Conditions in California, both climatic and economic, were almost ideally suited to stock raising, and as the mines and cities now furnished a market for the beef (whereas before the demand had been limited only to the hides and tallow), the cattle industry naturally expanded to an unprecedented degree and next to mining constituted the chief business of the state for nearly a decade and a half. The native California herds were also somewhat improved by interbreeding with stock brought overland from the Mississippi Valley. In 1850, for example, an emigrant from Pike County, Missouri, leaving in May with 800 head of stock reached the Stanislaus with nearly two thirds of the original number still alive. In subsequent years thousands of cattle in the same way were driven overland each season to California, some of them for immediate slaughter to supply the mines, and others for breeding purposes on the California ranges. These importations from across the mountains became so large, in fact, that it was reported that 40,000 animals were thus brought into California each year in 1855, 1856 and 1857. The growth of the cattle industry in these early years, however, is best indicated by a brief statistical summary. In 1846, when the industry was at its height under the Spanish-Mexican régime, it is estimated that there were 400,000 cattle in California. In 1850 the census reported only 262,000 head; by 1860 this number had risen to 1,180,000; two years later it stood at 3,000,000. The subsequent growth and decline of the industry forms an interesting story in itself.

Sheep raising in California, as might naturally be supposed, received the same stimulus from the influx of population after 1849 that the cattle industry had experienced. Prior to the secularization act, sheep growing had been

an important factor in the business of every mission because of the need of wool for cloth, but after 1834 the flocks dwindled to almost nothing and in 1850 only 17,000 sheep were reported in the state. After this, however, the increase was very rapid. As large numbers of cattle were brought into California from the Mississippi Valley, so to supply the demand for sheep thousands of these animals were annually driven overland along the southern route from New Mexico. In 1852 it was estimated that 40,000 sheep thus reached California and sold at an average price of \$16 each. The next year the number had risen to 135,000 and the price ranged from \$9 to \$12 a head. Thereafter for two years the number decreased to less than 30,000, but in 1856 it reached the huge total of 200,000. Prices, however, in the meantime had been completely deflated so that the sheep sold for only \$3.37 each. Due to these low prices and the outbreak of Indian wars in the Southwest the importations from New Mexico ceased after 1858.

Both the California and the New Mexico sheep were of an inferior breed and produced a poor grade of wool. Efforts were consequently made to improve the flocks by the introduction of Spanish Merinos and to a much less degree by the importation of typical English breeds, such as Shropshires and Southdowns. As a result, especially of the Merino importations, the sheep industry was placed on a much more satisfactory basis, both from the standpoint of meat producing qualities and of wool. The mild climate of California and the almost limitless grazing areas were especially favorable to the raising of sheep, so that in the decade from 1850 to 1860 the number increased from less than 20,000 to over 1,000,000 and the annual wool clip rose from 5,500 pounds to 2,683,000 pounds.

Despite this very large increase, however, this was only the beginning of the development of wool growing

in California and the prophecy, quoted by Wickson, of Colonel J. B. Crockett at the California State Fair held at San José, on October 8, 1856, did not require many years to become a reality. "In California, owing to our mild and equable climate, sheep are liable to fewer diseases and multiply more rapidly than in any other portion of the world; whilst our mountains and valleys furnish them with the most inexhaustible pasturage the year around. The cost of rearing them is, therefore, exceedingly small, and, instead of importing them from abroad for daily consumption, our mountains and valleys should be dotted with sheep and every clipper ship that leaves our ports should bear away tons of wool to set in motion the looms and spindles of Great Britain and New England. The time will come and, in my opinion is not very remote, when sheep culture on this coast will become a great and lucrative branch of productive industry. Indeed, I am aware of no greater benefit which an enterprising farmer can bestow upon California than by importing a flock of choice sheep of the best varieties to test our capacity to compete with Australia and other countries, in the wool markets of the world."

Though mining and the raising of cattle and sheep constituted the chief occupations of California during the decade after the discovery of gold, other forms of agriculture were also being established on a firm basis during this period. Many of those who joined the great migration to California were trained farmers, and after a short, and often unprofitable, experience in the gold fields they turned their attention to the agricultural possibilities which they recognized in the new state. This drift back from the mines to the land became increasingly evident after 1852, in which year Bancroft estimated that the average annual income of the 100,000 men engaged in mining was only \$600! Sufficient evidence of this shift of



occupations is furnished by a comparison of the census figures. The report of 1850 showed only 1,486 farmers living in California and listed no farm laborers; ten years later there were 21,687 persons classified as farmers and 10,421 as farm laborers.

The first crops produced in California on an extensive scale were naturally the cereals, especially wheat and barley. Wheat, the most important, was being raised in considerable quantities, chiefly in the Sacramento Valley, before the days of the American occupation, and in 1847 the *Alta Californian* stated with some satisfaction that domestic flour could be bought in California for \$6 a hundred which was only twenty-five per cent more than the average cost for flour in the United States. As the inflated prices of the gold rush period stimulated the raising of cattle and sheep, so they did also the production of wheat. When those abnormal conditions passed and economic life began to run along more natural lines, the wheat growers still found in the steadily increasing population of the state a ready market for their product. Later much of the grain was shipped to Europe. This trade made it possible for the vessels which touched at California ports to return with full cargoes instead of in ballast and the flinty dryness of the California grain enabled it to stand the long sea voyage without noticeable deterioration. The rapid increase in wheat production which took place in California after 1850 is again best shown by comparative figures. In the year just mentioned the yield was placed at only 17,328 bushels; two years later it had risen to 297,000 bushels; and by 1860 it was 5,900,000 bushels.

For a short time the production of barley was much greater than that of wheat, but long before the end of the decade the position of the two had been completely reversed. Starting with a yield of less than 10,000 bushels

in 1850, the barley crop for 1852 rose to 2,000,000 bushels and in 1860 the production was placed at nearly 4,500,000 bushels. In that year California ranked first among the states of the Union in the production of barley and it has held this position ever since. Corn, oats, rye, and buckwheat were also produced but on a much smaller scale than either wheat or barley.

During this period, hay, too, began to be grown in commercial quantities and though the amount was small, beginning with some 2,000 tons in 1850 and rising to 300,000 tons ten years later, the enterprise was important because it marked the beginning of the production of alfalfa, showed the commercial value of that crop and also made possible the development of the dairy industry. During California's colonial period, cows were almost never milked except to provide for the younger children and furnish a little milk for cheese. One reason perhaps for this was that the California range cows were not bred for milking purposes and it was consequently not until the importation of dairy stock from the eastern and middle western states that the dairy industry assumed any tangible proportions. In 1850 milk was selling for something over fifty cents a quart and the census showed less than 1,000 pounds of butter produced in the state and almost no cheese. At that time there were only about 5,000 milk cows in all of California. Ten years later this number had risen to over 150,000; and the annual production of butter exceeded 3,000,000 pounds and that of cheese 1,300,000 pounds.

During the decade under discussion a few desultory attempts were also made to develop the production of such crops as rice, tobacco and cotton, but none of these was successful enough to warrant a continuation of the experiment. In horticulture, however, the beginnings made between 1850 and 1860, though insignificant when viewed

in the light of later developments, were of genuine value in showing the adaptability of California to this form of agriculture and forecasting the profits to be made from it. These early experiments showed that the favorable soil and congenial climate of California combined to give trees and vines a strong and rapid growth, to bring them into early bearing, and to enable them to produce large and abundant fruit. Owing to the equable climate, failure of crops was rare; pests also were few and it was found that by proper pruning, irrigation and other precautionary measures, trees and vines could be kept in large measure free from their destructive ravages.

Prior to the influx of the 'Forty-niners, nearly every mission in California had at one time possessed a flourishing orchard. Most of these, however, had either been destroyed or had seriously deteriorated from neglect after secularization. A few private orchards had also been set out in widely scattered districts during the colonial era. The Russians, especially, on their lands near Bodega had planted apple and other trees of a superior quality before 1825. General Vallejo, perhaps obtaining his plantings from this Russian orchard, had also set out several varieties of fruit trees as early as 1830. The trapper, Yount, planted a peach orchard in Napa Valley in 1838. The Camulos Rancho near Ventura was noted for its fruits long before the American Conquest, and in Los Angeles, Wolfskill, Vignes and others were experimenting on a small scale with the cultivation of oranges.

A few of the foreigners who came to California after the American occupation or in the first years of the gold rush showed some slight interest in horticulture. As a consequence various kinds of fruit were grown very successfully in what is now Placer County and other sections further north even in these early years. Sacramento had an irrigated orchard in 1849; fruit trees were planted in

Trinity and Siskiyou counties in 1850 and shortly afterward Coloma County also began to be widely known for its orchards. During this time apples were grown more extensively than all other temperate zone fruits combined. The peach was second in importance, followed closely by the pear, apricot, and plum.

Wickson in his admirable book on California fruits gives this more detailed summary of the early beginnings of horticulture in California after the American occupation:

"The first cultivated fruits of the old era came to California with the padres. The first fruits of the new era came with the American pioneers. Though not a little inquiry has been made, it is not yet possible to declare definitely who brought the first budded or grafted trees upon California soil. It is a tradition in the family of Martin Lelong, who came to California as a member of Stevenson's regiment in 1846, that he brought with him a small lot of trees of French varieties of apples growing in a box, and that they were planted in Los Angeles.

"In the fall of 1849, W. H. Nash joined with R. L. Kilburn in ordering from a nursery in western New York a small box of thirty-six fruit trees, which, packed in moss, well survived the journey around the Horn, arriving and being planted in Napa Valley in the spring of 1850. The shipment included Rhode Island Greening, Roxbury Russet, Winesap, Red Romanite, Esopus Spitzenburg apples; Bartlett and Seckel pears, Black Tartarian and Napoleon Bigarreau cherries.

"Before the introduction of grafted fruit trees, and, indeed, for several years afterwards, there were many shipments of fruit-tree seeds from the Eastern States to California. Mr. Barnett planted Kentucky seed as early as 1847 in Napa County. T. K. Stewart brought to California with him, in 1848, about two hundred pounds of vege-

table and fruit seeds, the latter including peach, pear and apple, all of which were planted on the American River, within the present limits of Sacramento, in the spring of 1849. At the same time he planted figs and olives, and, in 1851, seeds of oranges. From all these he secured bearing trees.

"But these early efforts at improvement of California fruits were but faint forerunners of the zeal and enterprise which followed the great invasion by gold seekers. As soon as the first thought—to get gold directly from the soil—would admit the second—to get it indirectly, by agricultural and horticultural arts—there came a demand for something better than the wild fruits of the mountains, better and more abundant than the seedling fruits from the mission orchards. At first everything in the line of fruit-tree seed which could be obtained was planted. Thus the immediate vicinity of the mines soon began to show growing fruit trees. But seedlings of any kind would not satisfy the planters, and effort was put forth in every direction after grafted trees of the best varieties. Oregon had a few years the start of California as an inviting field for immigration and the advantage also of winning the attention of those who went out, not as gold seekers, but as agricultural producers. Oregon had grafted trees in bearing, and nursery stock as well, about the time the demand sprang up for it in California. Up to 1847 the cultivated fruit of Oregon consisted of seedlings introduced by the Hudson's Bay Company in 1824, and by the early settlers from the Mississippi Valley. In 1847 Henderson Lewelling crossed the plains from Henry County, Iowa, to Oregon, bringing with him a pretty general variety of grafted fruits. He fitted up a wagon, selected small plants, and planted them in soil in the boxes. He arrived in Oregon, late in the fall with three hundred plants alive. The same fall William Meek



arrived in Oregon with a few varieties of fruit trees. He and Lewelling put their stock together, and commenced the first nursery of grafted fruits on the Pacific Coast about five miles south of Portland, on the east bank of the Willamette River. In March, 1851, grafts of apple, pear, peach, plum and cherry were brought to California by Mr. Seth Lewelling and sold in Sacramento.

"Other commercial importations and shipments by planters for their own use were also made, so that the plantings of 1851-52 were quite large. Still there was great doubt as to the success of the trees. Mr. G. G. Briggs, after his great melon profits of 1851, went back to New York State for his family, and, returning to California, brought with him, as he says, 'with no idea that they would succeed, but as a reminder of home,' fifty peach and a few apple and pear trees. To his surprise, the trees grew well in 1852, and the next year blossomed and bore some of the best peaches he ever saw. The pears also bore some fine fruit the same year.

"There were other introductions of grafted trees in 1852, for, at a fair held in San Francisco in 1853, there were several kinds of apples, grown by Isaac A. Morgan, of Bolinas, on trees planted the previous year. Apples were also shown from Napa. David Spence, of Monterey, showed the first almonds grown in California. During the winter of 1852-53 the distribution of grafted trees extended widely over the State. Five dollars for a small tree was frequently paid at the nursery in Oregon, and the trees were carried overland into the mining districts of California, as well as brought to San Francisco for distribution through the valleys."

Of the semi-tropic fruits grown in this decade the orange was the most important. Its production was the direct result of successful experiments made at San Gabriel at the beginning of the century. It is generally agreed

that the first orchard of any size was planted at that mission about 1804 and comprised some 400 seedling trees. This orchard was not designed for commercial purposes but the success of the venture established the fact that the climate and soil of the San Gabriel Valley were almost perfectly adapted to the production of citrus fruits. In a short time orange trees from this orchard at San Gabriel found their way into the gardens of other missions and of the near-by rancheros. Perhaps the largest number of orange trees in any private garden in California at this time were thirty-five seedlings transplanted about 1830 from San Gabriel to a plot of ground fronting on Aliso Street in Los Angeles.

It remained, however, for William Wolfskill, a Kentucky trapper of German blood, who had come overland to Los Angeles in 1831, to forecast the commercial possibilities of this fruit. Wolfskill secured a number of orange trees from San Gabriel in 1841 and planted a two-acre tract in what is now the city of Los Angeles on the spot today occupied by the Arcade Station of the Southern Pacific Railroad. The fruit from these trees sold to such advantage that the orchard was later increased in size to twenty-eight acres and finally to seventy.

The large profits made by Wolfskill from his orchard attracted others to the business. In 1853 Mathew Keller secured orange seeds from Hawaii and Central America and developed an orchard across from that of Wolfskill. In 1857 L. Van Leuwn planted orange trees at old San Bernardino and in the same year F. L. Cram started a small orchard at Highlands. Despite the success of these ventures, however, the appearance of the black scale in 1857, the exacting care required to produce desirable oranges, and the necessity of waiting six or seven years for the trees to yield a paying crop prevented any great growth of the citrus industry during this first decade.

In addition to these pioneer efforts to develop the orange industry, a number of enterprising ranchers planted orchards of lemons, limes, figs, olives, and walnuts. These ventures, however, were on so small a scale or produced such slight results that time cannot be taken to describe them.

Horticulture does not belong to the semi-pioneer social and economic stage through which California was passing between 1850 and 1860. Men had neither the capital nor the inclination to wait the four, five or six years necessary for orchards to come into bearing. Their markets, too, were extremely limited because of the difficulty of shipping fruit any considerable distance under the primitive system of transportation then prevailing. And, finally, the conditions in California (as for example the necessity for irrigation), which affected trees and fruit alike, were so foreign to most of those who were then engaged in ranching that time and experience were required before they could make a success of their horticultural experiments. How small a place this branch of agriculture occupied in the decade under consideration may be seen from the fact that the value of California fruits in 1850 was listed at the trivial figure of \$17,700, and in 1860 at about \$750,000. Today it has reached the enormous total of approximately \$250,000,000!

Of much more immediate importance than horticulture between 1850 and 1860 was viticulture. This was natural enough, for the Californians of the colonial period had been much more concerned with the production of grapes and the making of wine than with the growing of fruit. Baja California supplied the first vine slips for the vineyards of Alta California. These were probably originally planted at San Diego and cuttings from them were then taken to San Gabriel where they developed into the *Viña Madre*, or the mother vineyard, of California. Whether

the original stock was Malaga, changed by transplanting in Mexico, or Alicante is not known. At any rate, the variety was soon commonly called the Los Angeles grape. It is still found in nearly all old vineyards and has a reddish-black berry, rich in sweet juice. About 1820 a grape of Madeiran stock was introduced north of San Francisco Bay and was more widely cultivated throughout the northern valleys. This grape, known as the Sonoma, was smaller, of bluish-black color, covered at maturity with a grayish dust, had more meat and fruitiness of flavor, and yielded a lighter wine. Both of these varieties were called indiscriminately the Mission, Native, or California grape. Los Angeles was the center of the vine region and as early as 1831 there were fully 100 acres planted to grapes in this section. These vineyards contained one half of the 200,000 vines then in the province.

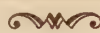
Just how much wine was being produced at the time of the discovery of gold cannot be determined. The census of 1850 gave a total of 58,055 gallons, all of which came from Los Angeles and Santa Barbara counties; but there was undoubtedly a considerable quantity also manufactured in the north. After 1849 much of the Los Angeles wine was shipped to San Francisco where it commanded a high price because of the abundance of ready money and the never-failing thirst of the miners when they returned to civilization. Sonoma was also famous for its wine and in October, 1850, its grapes sold in San Francisco for as much as forty cents per pound. As a result of such demand many new vineyards were quickly set out, even in the mining regions.

William Wolfskill, famous for his contribution to the citrus industry, was also one of the pioneer grape growers of Southern California, but the real father of the industry was a Swiss immigrant, named Arpad Haraszthy, who planted a vineyard in San Diego in 1851 and in 1853

began to introduce new varieties of grapes from the eastern states and from Europe. The principal variety planted by Haraszthy was the Zinfandel. Not long afterward this pioneer viticulturist bought a vineyard near Sonoma and with a partner named Delmas continued the introduction of various French varieties. The native grape, however, both because of its relative cheapness and the ease with which it could be obtained, was in no danger of being displaced by the foreign importations and only a few of the 1,500,000 vines planted in 1855 were of foreign stock.

Throughout this decade Los Angeles continued to lead in viticulture. In that county in 1858 there were 2,000,000 vines, half of which were in bearing; and out of a total of 245,000 gallons of wine produced in California in 1860 the census report credited 163,000 gallons to Los Angeles. In the same county raisin making was attempted in 1859 on a small and unsuccessful scale, and the experiment was also tried of shipping fresh grapes in sawdust to San Francisco. This venture was so successful that it is said from a million to three million pounds a year thus found their way to market.

Simultaneously with the cultivation of fruits and grapes began the development of market gardening. As the gold excitement began somewhat to subside the idea of raising vegetables as a means of supplementing their normal diet of salt meat and saleratus bread began to make a strong appeal to the immigrants and miners. The first of those who thus engaged in commercial gardening were moreover well rewarded for their efforts. The subsequent rush of competitors, especially those of Hispano-American extraction who had been forced to leave the gold fields by the Anglo-Saxon miners, greatly reduced these profits, but an encouraging compensation was found in the surprisingly large yield, the uninterrupted growth of most vegetables throughout the year, and their general superi-



ority, both in size and weight, to the product of the eastern states. "Our kitchen vegetables grow to an unparalleled size," wrote John S. Hittell. "Nowhere else have pumpkins been seen to reach two hundred and fifty pounds in weight each, beets one hundred and twenty pounds, white turnips, twenty-six pounds, solid-headed cabbages seventy-five pounds, carrots ten pounds, watermelons sixty-five pounds, onions forty-seven ounces, Irish potatoes seven pounds, sweet potatoes fifteen pounds, and so forth."

If these early reports are further to be believed the return from these first vegetable farms were extraordinarily large. Several gardens yielded more than \$3,000 per acre in 1849. In 1850 four men near Sacramento received \$40,000 from sixteen acres planted to potatoes. A tomato crop of one and one half acres was valued at \$18,000, and a farmer near San José, planting 150 acres to potatoes, onions, and tomatoes, realized a return of over \$200,000. Potatoes were grown more extensively than any other vegetable, a preference which was certainly warranted if the experience of a rancher near Santa Cruz could be considered a fair criterion. He is reported to have raised a 25,000 bushel crop from twenty-five bushels of seed!

While the agricultural resources of California were gradually being developed after 1850 along the lines just described, its industrial life was also beginning to take definite and to some degree permanent form. At first the development of manufactures was hindered by such serious drawbacks as shortage of labor, lack of machinery and raw materials, insufficiency of capital, and especially by the fact that nowhere in California were there coal deposits of any magnitude. To establish manufactures under such conditions was manifestly difficult.

Within a few years, however, the outlook became more favorable. The back-drift from the mines and to some

degree the coming of the Chinese met the problem of labor. Though many essential raw materials were still lacking, others were to be had in almost limitless quantities. There were countless hides to be made into leather, primeval forests to be converted into lumber, and vast fields of wheat to be ground into flour. Necessity, as always, likewise proved a great stimulus. The separation of California from the industrial centers of the United States and Europe greatly increased the price of imported commodities and often necessitated inconvenient and costly delays. To meet these conditions local manufactures of various kinds were accordingly established.

Nearly a hundred flour mills were operating in the state by 1860 and about three times as many sawmills. To supply the need of the mines for tools and machinery a number of foundries and iron works were opened early in the decade, chief of which was that of the Donahue Brothers established in San Francisco in 1849 and later known as the Union Iron Works. A number of tanneries were also erected at various centers; a sugar refinery, supplied with raw sugar from the Hawaiian Islands, was built on San Francisco Bay in 1860; the fabrication of coarse woolen cloth was begun on a small scale; salmon fisheries were started; and to supply the lack of wheeled vehicles which had been almost unknown in California during the whole of the Spanish-Mexican period, carriage and wagon factories were opened in nearly every city.

All told, therefore, exclusive of the mining industry itself, there were in operation in California in 1860 nearly 1,450 industrial establishments. These represented an investment of \$11,000,000, employed 6,400 operatives, paid \$5,500,000 annually in wages, required \$11,000,000 worth of raw materials each year, and produced goods to the value of \$23,000,000. Gold mining was carried on by 7,042 companies, represented an investment of over

\$11,000,000, employed about 46,000 persons, and produced an annual return of more than \$45,000,000.

In summing up this first decade of California's economic development under American control certain essential characteristics should again be noted. In the first place the period was one of transition and experiment—of transition from the pastoral, economically backward era of the Spanish-Californians and of the sensational days of the gold rush to an economic life based upon the normal development of the state's extensive and varied resources; and of experimentation to determine what industries, what forms of agriculture, and what methods were best suited to the accomplishment of this purpose.

Mining and stock raising, the typical activities of a frontier community, remained the chief industries of the state during these years. The population, though overwhelmingly large when contrasted with that of the pre-mining period, was still wholly insignificant compared to the enormous extent of territory included within the boundaries of the state. Transportation, as has been shown in *Oxcart to Airplane*, was inadequate to meet the needs of so large an area. Capital was lacking for its development. Land titles, always a matter of fundamental concern, were often confused and insecure. The forms of agriculture which later were to bring the state its greatest wealth were just emerging from the experimental stage. Industrial development was still in its infancy. Almost all the population of the state was concentrated in the mining regions, or in such cities as San José, Stockton, Sacramento and San Francisco. The last named, of course, was then the financial, commercial and industrial arbiter of the state. In its great bay rode the ships of every nation; through its streets passed the peoples of every land; the gold from the mountains came down to enrich its bankers and merchants; and out of its shops and

warehouses flowed in return an endless stream of merchandise to the mines.

In the interior the valley of the Sacramento had undergone some development but the resources of the San Joaquin were virtually untouched. Along the coast from Monterey to San Diego lay the vast cattle ranges, changed perhaps in ownership from the days of the Spanish-Californians, but not in extent or character. This vast area, whose boundaries were greater than those of all New England, possessed a few sleepy pueblos, such as Santa Barbara, Los Angeles and San Diego;

it maintained a few thousand inhabitants, most

of whom were native Californians; and

it lived under the spell of an economic

life that was almost entirely

pastoral in its character.

Chapter III



CHAPTER III

Agriculture and the Making of an Empire

FOR SOMETHING more than a decade after the discovery of gold, the production of that metal constituted the largest single factor in the prosperity of California; but thereafter a definite decline set in which reduced the annual output from about \$50,000,000 in 1859 to some \$18,000,000 in 1870 and from this figure there was but little variation until the end of the century. With the decline of mining, agriculture came to be the dominant factor in California's economic life. During the forty years from 1860 to 1900 this industry passed through three distinct phases—the era of cattle, the era of grain, and the era of intensive farming. It is the purpose of this chapter to describe each of these in turn.

One characteristic that was to some degree shared by both the cattle and grain eras was the question of disputed land titles. This issue, which was the heritage of the transition of California from Mexican to American ownership, arose from three sources. The first of these was the indefinite, overlapping boundaries of many of the great Spanish-Mexican land grants; the second was the failure on the part of the recipients of those grants to perfect their titles, prior to the American occupation, by performing the technical requirements stipulated by Span-

ish or Mexican law; and the third was the confusion resulting from the requirements laid down by the American government for establishing the right of ownership after the annexation of California.

To understand the situation to which these conditions gave rise it is necessary to remember that, with the exception of climate and atmosphere, land was the cheapest and most abundant thing in Spanish-California. It was accordingly granted to almost anyone who had the ambition to ask for it with a largeness and prodigality that were in keeping with nothing less than the partitioning of an empire. With the easy-going indifference of that day the holders of these huge grants cared nothing for fixing the exact boundaries of their land—for of what concern was the matter of a few hundred acres either way?—and many of them did not even go to the trouble of completing the formalities necessary to perfect their titles. This careless and haphazard system of land holding served well enough in the days of the Spanish Dons, but with the coming of the Americans and the development of a more complex civilization it became of course impossible. In the confusion and uncertainty to which this situation gave rise after 1848 many of the native Californians who held domains of princely size found themselves stripped of their possessions and reduced to poverty.

The procedure by which the United States government sought to establish the old Spanish-Mexican land titles and fix the legal boundaries of the various grants was sound enough perhaps in theory, but in practice it was cumbersome, ill-suited to the conditions prevailing in California and often strikingly unjust in its operations. Its principal features and unfortunate consequences as summarized by John S. Hittell will be found set forth at length in the Appendix of this volume.

In addition to the land which passed out of the hands



of the native Californians because of title and boundary difficulties, vast additional holdings were lost to them through fraud, mismanagement, debts contracted at usurious rates of compound interest sometimes ranging as high as three per cent a month, and inability to meet the problems and conditions arising from the new order. What took place in California, in other words, with the coming of the Americans was the familiar and oft-repeated story of a more aggressive, efficient people coming into contact with a race less ambitious, less energetic, and altogether incapable of maintaining its position against its vigorous rivals. From an ethical standpoint the results of such an impact are frequently indefensible; but purely from an economic point of view they may work a salutary revolution. In any case, moreover, they appear to be inevitable.

"The native Californians simply could not make headway against or in competition with American progress," wrote Graves. "One by one they faded away. Many of them died in poverty. Their children became day laborers. Occasionally one of the younger generation received an education and assumed a position of importance and respectability in the community, but the majority of them did not. It is the sad story of the downfall of a happy, peaceful people, passing off the earth in less than two generations. . . . No sadder picture could be drawn than that of the legal despoliation, by the Americans, of the original grantees of these immense land holdings."

In addition to the element of injustice, the land policy followed by the Federal government in California involved, in the land titles of the state, as already suggested, a decided element of uncertainty and insecurity which lasted for a generation. "Why is it then that the permanent population of the state has not increased more rapidly?" asked one writer of the 'sixties. "Why have so many of the early immigrants left her shores, never to re-

turn, by their departure depriving her of the greatest element of wealth? The great cause is the mismanagement of land-titles by the Federal Government, and the consequence is, that the people have been unable to secure homes, and therefore have gone to the eastern states, where they could find permanent residences. This mismanagement has prevailed both in the mineral and agricultural districts, and has produced incalculable evils."

Another observer of California conditions, both good and bad, pointed to the same factor as a major hindrance to the development of the state in the 'sixties and 'seventies. "Another serious impediment, however, to farming in California," said this writer, "is the insecurity of titles. Partly by fraud, partly by mortgage, almost the whole of the old Spanish grants have passed into the hands of the Americans. Today innumerable claimants arise in the persons of the numberless descendents of these Mexicans, and it is not an infrequent thing to see in an action to quiet title, one plaintiff and from a hundred and fifty to two hundred defendants; as, for instance, John Smith vs. Jesus Maria Castro, Conception Castro, etc., and all the tribe of Castros married and unmarried, their wives, their children, the collateral branches, all must be made parties to the suit, for if unfortunately a single defendant be omitted, then some sharp practitioner buys his claim, and forthwith commences an action for a two-hundredth undivided share of one-fifth of the whole estate, sometimes twenty leagues in extent, and thus a cloud is cast on the whole."

By 1860, as already stated, the day of the native California land holders was nearing its tragic close. Many of the great ranchos, it is true, still remained intact but their owners were men of a different race, of a different (though perhaps not a more satisfying) philosophy of life, and of a totally different economic training and ca-

capacity. Under these new owners stock raising remained for a few years more the most distinctive branch of California agriculture, reaching its height in 1862 when it was estimated that the state was supporting at least 3,000,000 head of cattle besides large numbers of horses and sheep.

But a combination of circumstances was hastening the transition in California from the pastoral stage to other types of farming. The most immediate of these in its influence was the great drought of 1863-64. The following description from Cleland's *History of California* will be sufficient to show the effects of this unprecedented disaster upon the oldest of the state's occupations:

"The fall of 1863 was unusually dry; and even the winter months, during which California normally receives her chief rainfall, brought no relief. Day after day went by with cloudless skies; and the grass failed to sprout from the famished earth. The springs and water holes dried up, and the great ranges were eaten bare of every kind of feed.

"The loss of cattle was fearful,' says the historian of early Southern California in speaking of this drought. 'The plains were strewn with their carcasses. In marshy places and around the *ciénegas*, where there was a vestige of green, the ground was covered with their skeletons, and the traveler for years afterward was often startled by coming suddenly on a veritable Golgotha—a place of skulls—the long horns standing out in defiant attitude, as if protecting the fleshless bones. It is said that 30,000 head of cattle died on the Stearns Ranchos alone. The great drought of 1863-64 put an end to cattle raising as the distinctive industry of Southern California.'

"The Sacramento *Union* estimated that from one-half to three-fourths of the cattle in Los Angeles County died of starvation in this great drought. The *News* stated that

5,000 head had sold in Santa Barbara for 37½ cents apiece. Only one rancher held a rodeo in all Los Angeles County during that disastrous season. Range lands fell so low in value that some of the southern counties assessed them at ten cents an acre—the same valuation that was placed on each individual grape vine in the wine vineyards.

“The cattle industry could not survive the disaster. Many of the ranchers, who had borrowed money at the usurious rates then in vogue, were forced to give up their holdings; and the new owners found it more profitable and less risky to divide the ranges into small ranches and sell them in this fashion to the ever increasing number of settlers, than to attempt to maintain the business of cattle raising in the old way. So, while the drought of 1864 brought loss and in many cases ruin, and changed the whole economic life of Southern California, it was after all a blessing in disguise; for it led to those diversified and highly productive forms of agriculture which have so long furnished the basis of Southern California’s prosperity, and determined her whole mode of life.”

In a more specific way the lasting effect of this revolutionary disaster upon the economic development of Southern California may be illustrated by the case of the greatest of all the cattle barons—Don Abel Stearns, to whom reference was made in one of the preceding paragraphs. One of the outstanding figures in Southern California even during the later years of the Mexican régime, Stearns had added to his holdings after the transfer of California to the United States until by 1860 he owned a principality in land consisting of seven great ranchos lying in the San Gabriel and Santa Ana valleys. The fate of these holdings is thus described by J. M. Guinn:

“Don Abel Stearns, the Rockefeller or Pierpont Morgan of the old pueblo, in the flush of ’49 and the early ’50’s, when a cattle range was more profitable than a gold mine,

with that Yankee shrewdness that characterized him in all his dealings, had turned his genius to the acquisition of land. By loaning money on mortgages to impecunious rancheros, by the purchase of equities in encumbered estates and by foreclosures, he had possessed himself of immense land holdings. When the famine years had passed and the bones of his hundred thousand cattle lay bleaching on the sun-scorched plains, Stearns found himself the owner of a principality in land, greater than that of an English lord; but financially on the verge of bankruptcy. He was the owner of 200,000 acres of land mortgaged for \$50,000. The ruling rates of interest then ranged from fifteen to twenty-four per cent per annum. Without income from his acres and indebtedness piling up, Stearns found himself not only on the very verge of bankruptcy but just ready to topple over into the vortex of insolvency. In 1864, all of Stearns' landed possessions were advertised to be sold at a sheriff's sale for delinquent taxes and the total amount of his taxes was only about \$4,000. The ruling prices of land in Southern California after the famine years were twenty-five to fifty cents per acre.

"The land known as the Stearns' ranchos comprised the following grants: Los Coyotes, La Habra, San Juan Cajon de Santa Ana, Las Bolsa y Paredas, La Bolsa Chica, and a part of the Los Alamitos. Stearns, with the assistance of his old-time friend, Alfred Robinson, succeeded in negotiating the sale of these ranchos and the holdings he had in San Bernardino County to a syndicate of San Francisco capitalists. The original members of the syndicate were Sam Brannan, E. F. Northam and C. B. Polhemus. Stearns reserved an eighth interest in the land. The price paid was one dollar and fifty cents per acre. The partners in the deal incorporated under the title of the Los Angeles and San Bernardino Land Company. Alfred Robinson,

the author of the famous book, 'Life in California,' was made trustee and signed all transfers.

"These 200,000 acres were subdivided and in 1868 were put on the market in tracts of forty acres and up, on easy terms at prices ranging from \$2 to \$10 per acre. They were extensively advertised.

"The lure of cheap lands brought a rush of immigrants from central and northern California and from the eastern states, and our first boom was on, and it might be added, that booms have been on again and off again and gone again many times since, but none of them was such a success or did so much for the development of the country as that first one. The price of the land was advanced from time to time as the country was settled. When the land was all sold, the members of that syndicate or their heirs cleaned up a profit of \$2,000,000."

The immediate effect of the Great Drought, as before stated, was to bring about a drastic reduction in the number of cattle in the state. Six years after the disaster the census reported only 630,000 head, or not much more than one fifth the estimated number for 1862. Confidence in the industry was naturally badly shaken, and the transition already under way from cattle raising to grain production was given decided impetus. Within the industry itself important changes also took place about this time or a little later. The first of these was a marked improvement in the quality of the cattle. Of the 815,000 head recorded in 1880, 250,000 were classed as American stock and assessed at \$18 a head; 425,000 were listed as seven eighths American stock and assessed at \$10.39 a head; 110,000 were returned as one half to three fourths American stock and assessed at \$9.49 a head; 29,000 were classified as unmixed California or Spanish cattle and assessed at only \$8.00 a head. One thousand animals were listed as thoroughbred and assessed at \$57.00 a head. Thus

some thirty years after the close of Mexican rule, as a result of the introduction of American and English stock, the unmixed native cattle had almost entirely disappeared. With this change came a decided increase in the size of the California animals. Under the improved methods of breeding and feeding the average net weight of yearlings rose from 250-400 pounds to 400-450 pounds, and that of beeves from 450-500 pounds to 750-800 pounds.

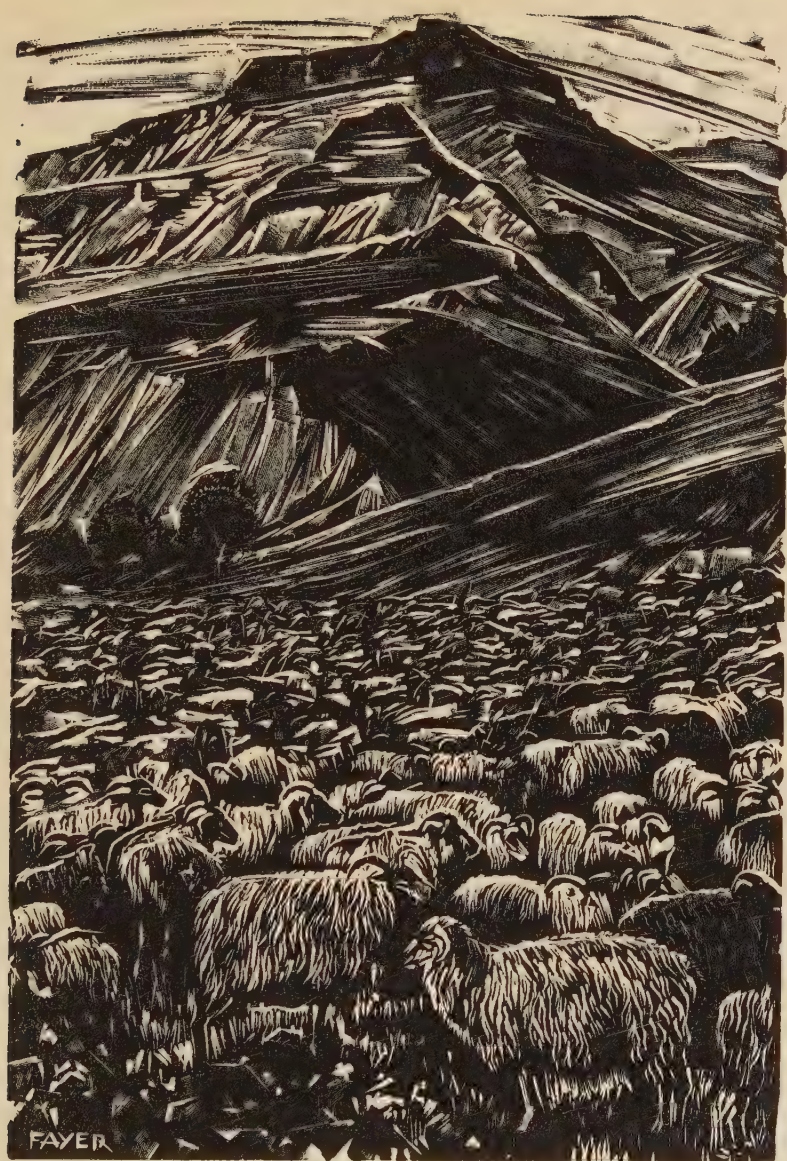
With the disappearance of the Spanish cattle went also the vast, unfenced ranges of the earlier days. One explanation of this was the fact that the better breeds of stock deteriorated when left to run without restraint. Moreover, after 1870 the system of "free grass" or pasturage without charge on the vast areas which belonged to the Federal government, changed almost wholly to that of private ownership or government lease. By 1880 there was but little good government land left in California. Much of it had been granted to the railroads and most of the remainder had been disposed of through soldiers' warrants, university grants, school warrants, and swamp and overflow lands donated to the state. A large part of this land was originally sold at prices varying from seventy-five cents to \$6 per acre, but by 1880 good pasture land was held at \$25 per acre and grass land on the routes of the main drives to market brought \$100. In fact at this date there were but few cattle on unfenced public lands except in Kern, San Bernardino, and San Diego counties; and even in these districts, in keeping with a practice followed in nearly all the western states, almost all the free lands were controlled by a few large companies which by possession of the strategic water holes exercised a monopoly over all the surrounding government land. As an example of this practice one may cite the case of the Tejon Rancho in Kern County where the ownership of 200,000 acres in fee and the control of the available

springs and watercourses in the district made it impossible for anyone but the owner of the ranch, General Edward F. Beale, to profit from the use of some additional 300,000 acres of near-by public lands.

With the end of free grass and the reduction of the grazing areas because of the enhanced value of land for farming and horticulture, cattle raising came to be more and more restricted and the proportion of farm-reared stock to range cattle greatly increased. Moreover to obviate loss during periods of drought the production of hay was undertaken on a much larger scale and the amount grown almost trebled in the twenty years from 1860 to 1880. In the latter year the crop was something over 1,000,000 tons and by 1900 it had risen to 3,000,000 tons. Concurrently with the adoption of the restrictive methods in cattle raising came about the further development of the dairy industry which had been started in the early 'fifties, but further discussion of this subject is reserved for a later section.

Sheep raising, which had been established on a large scale after 1850, was checked like the cattle industry by the drought of the 'sixties, but thereafter it experienced a period of great prosperity, reaching its greatest height about the middle of the 'seventies. From about 1,000,000 sheep in 1860 the flocks increased to over 2,750,000 in 1870. Thereafter for nearly a decade the number fluctuated greatly from year to year. In 1871 droughts caused the loss of twenty per cent of the flocks, but the industry recovered from this setback, and by 1875 it was estimated that there were nearly 7,000,000 sheep in California.

During this period of greatest prosperity, approximately from 1865 to 1875, the profits from sheep production were very large, frequently running as high as fifty per cent a year. In the early 'seventies wool was selling for twenty-five cents a pound and a single clip in 1872



FAYER



from the flocks on Santa Rosa Island paid the entire purchase price of the island embracing 65,000 acres of land. The following resumé of the industry prepared in 1870 by John S. Hittell gives in a more detailed way the basis upon which these profits rested:

"In 1853, the breeding of sheep for their wool was first undertaken in California, by W. W. Hollister, who commenced in poverty and made a fortune at the business, and his success was followed by that of a number of others. Now, the breeding of sheep is an important part of the agricultural industry of the State. The production of wool in 1869 was eighteen million pounds; the average quality is about half merino, and the average net yield to the farmer about eighteen cents per pound. The quality of the wool is improving every year, as the blood of the herds is brought nearer the pure merino. The Spanish sheep furnished the original stock, but the Spanish blood is rapidly decreasing.

"Our climate is peculiarly favorable to sheep. They need neither shelter nor cultivated food—at least most of them never receive either. The weight of the animal is ten per cent, that of the fleece twenty per cent, and the increase almost one hundred per cent greater here than in the Eastern States. Besides, the sheep generally live longer. There is no disease among our herds, save the scab, and that is never fatal. If we add together the exemption from disease, the more rapid increase, the greater weight of fleece and mutton, the saving in sheds and cultivated food, and the difference in cost of pasture lands, there is a large total in favor of the Californian wool-grower.

"One shepherd can take charge of two thousand one hundred sheep, and the common wages are thirty-five dollars per month, with board, which costs ten dollars per month, making five hundred and forty dollars per year. About three thousand acres of land are required for pas-

turage, and the interest on the cost is three hundred dollars, making a total of eight hundred and forty dollars, or twenty-five cents per head, for the ordinary annual expenses. It is necessary to incur other expenses at lambing and shearing times, and these cannot be calculated so precisely, but they do not exceed ten cents per sheep, so that the expense per head is thirty-five cents or less. The yield of wool averages six and a half pounds per year, and the prices, if the quality is good, are from eighteen to twenty-five cents.

"A gentleman of much experience in the sheep business sold three thousand ewes for four dollars each, or twelve thousand dollars, and after the sale calculated the profit that the purchaser would make in two years, thus:

First year's wool.....	\$ 7,200
Second year's wool of three thousand lambs.....	3,500
Second year's wool of three thousand ewes.....	7,200
Market value of one thousand five hundred wethers.....	4,500
Market value of three thousand old ewes.....	12,000
Market value of one thousand five hundred young ewes.....	4,500
Total.....	<u>\$38,900</u>
Deduct expenses of three thousand sheep at thirty-five cents for first year.....	\$ 1,050
Six thousand sheep for second year.....	2,100
Cost of three thousand ewes.....	<u>12,000</u>
	\$15,150
Net profit.....	<u>\$23,750</u>

"That may seem very extravagant, but there are men in the state who have been making money at this ratio in sheep for a long period, with the exception of the seasons of drought. One sheep-owner began in debt, in 1853, and now he owns forty thousand head of sheep, and seventy thousand or eighty thousand acres of land—all made with sheep."

Despite such satisfactory profits, however, during the fat years of rain and grass, the sheep industry was not without its drawbacks. Especially before the coming of

the railroads, which made it possible to bring in feed or transport the sheep to new pastures, the danger of drought was always present and when the rainfall was especially light the industry suffered tremendous losses and not infrequently entire flocks would be wiped out. As an illustration of this, one may cite the case of the Rancho Sespe in Ventura County. This ranch, now belonging to Mr. and Mrs. Keith Spalding of Pasadena, grazed 18,000 head of sheep. In the drought of 1876-77 an attempt was made to drive 13,000 of these animals across the mountains to Owens Valley, but most of them died on the way and the few that remained were of so little value that they were given away to a rancher living near Lone Pine. In the same year the owner of the Saticoy y Santa Paula Rancho bought a flock of 18,000 sheep for twenty-five cents each and started them to a feeding ground a hundred miles away in Soledad Cañon. Before the band had gone many miles 3,000 of them had died along the way. Later camp was made for the night in the bed of the Santa Clara River where there was water, but no grass. The next morning "when camp aroused itself, only one sheep was not stretched out prone and most of them were dead. This single sheep that was able to raise its head and give out a faint, weak 'baa,' was all that was left that showed the least signs of life, and after two or three futile attempts to get to its feet, it toppled over and died."

To the sheep industry as a whole this drought of 1877 caused almost as much loss as the great drought of the 'sixties had caused to the cattle barons. The number of sheep within the state in 1878 was at least 2,500,000 less than in 1875 and nearly a decade was required for the industry to recover from the effects of the disaster.

It was shown in an earlier section of the chapter that the cattle industry began its decline with the great drought of 1864. This disaster, however, was not the

only factor responsible for the diversion of interest from stock raising to other forms of agriculture in the middle and late 'sixties. The growth of population, increased cost of land, and development of railroads, though not so immediate in their influence, were much more permanent than a season's lack of rain.

Under the conditions prevailing in California at that time grain was the logical substitute for cattle. This crop did not require intensive methods of cultivation, it was grown without irrigation, it could be shipped long distances at little cost by sea, and it was not dependent upon the local markets but was a staple commodity in international trade. In addition to this, the long hot summers of California, especially in the interior valleys, produced a hard, dry wheat which, as already stated, would stand the long voyage to Europe without deterioration. There was also no danger from rain during the harvesting season and the grain could be left in the open fields until it was ready for shipment.

These numerous advantages were well summed up by a contemporary writer as follows: "Wheat is the great agricultural product of California. Our climate and our soil are peculiarly adapted to the production of an immense quantity to the acre of a quality scarcely seen equalled, certainly not surpassed, by any other country in the world. The quality of our wheat is so superior, and the flour produced therefrom of such surpassing excellence, that both have a world-wide reputation, and in all the markets of the world, to which they are exported, command the very highest price. A chief cause of this superiority is, without doubt, found in a peculiarity of our climate. The rainy season, which is our planting and growing season, ceases in the spring, about the time the grain is maturing. From this time until long after the grain is garnered and prepared for market, there is little or no



rainfall, and so little moisture in the atmosphere, that the wheat (or other grain) may be, and frequently is, left in the field for many weeks, without injury from this source. The general division of wheat into "winter" and "spring," common in the wheat-growing districts of the Eastern States, is unknown in California. The planting season begins with the autumnal rains, about the first of November, and continues generally, as farmers prepare their ground, until late in February. The grain begins to mature early in June.

"The qualities in which our wheat excels are, glutinousness or strength, flintiness or dryness, whiteness of color, thinness of skin, cleanness, plumpness and size of berry and weight.

"The cheapness with which wheat can be produced, and the extraordinary yield, frequently exceeding sixty bushels per acre, have made it a favorite crop with our farmers; and, as our surplus has generally found a ready market at fair prices our wheat-growers have made large profits in this branch of industry."

Because of this combination of favorable circumstances, California about the close of the Civil War became one of the chief grain producing states of the Union; and the prophecy made many years before that the land, then for the most part only a wilderness, would one day become the "granary of the Pacific" was fast becoming a reality. Wheat and barley were the chief cereal crops of the state. After 1860 the ratio between these grains was roughly two to one in favor of wheat. The latter crop, indeed, beginning with a production of about 6,000,000 bushels in 1860, showed a huge increase each decade for thirty years. In 1870 it had risen to over 16,000,000 bushels; in 1880 to 29,000,000 bushels and in 1890 to 40,000,000 bushels, giving California in that year second place among the wheat producing states of the Union. In the meantime barley

had increased from 4,500,000 bushels in 1860 to 8,700,000 bushels in 1870, 12,500,000 bushels in 1880 and 17,500,000 bushels in 1890. In 1900 wheat showed a falling off to 36,000,000 bushels and barley production rose to 25,000,000 bushels.

The production of both wheat and barley, though pretty general throughout the state, centered very largely in the San Joaquin Valley and to a lesser degree in the Sacramento. Here climatic and soil conditions were exceptionally favorable, land was cheap, and millions of acres which in the days of the Spanish-Californians had been simply the feeding ground for innumerable bands of deer, antelope, elk and wild horses and later had been used only for the grazing of cattle, now awaited cultivation.

Most of this land, like the rest of the land in the state not included within the limits of the old Spanish-Mexican grants, had come into possession of the United States government in 1848 and was thrown open for preemption or homesteading to private individuals; but many years went by before there was much demand for it. A careful writer observed in 1872 that the plains of the San Joaquin and Sacramento "lay for years in the market as Congress land, and could get no buyers; and it was only during the war that men began to think them valuable. Then thousands of acres were bought for greenbacks, when gold—the currency of this State—was at from 150 to 200; that is to say these lands cost from sixty to seventy-five cents per acre."

By 1870 the scramble for California land was in full swing. An intensive advertising campaign was under way, sponsored especially by the Central Pacific Railway which had received enormous land donations from the Federal government, and thousands of acres of hitherto unproductive areas were passing into private hands for cultivation. In one of the innumerable pamphlets on



California resources of that day appeared this interesting summary:

The Public Lands of California

“According to the United States surveys and estimates, California contains 188,981 square miles, or 120,947,840 acres; of which 30,408,426 acres have been surveyed, and of these 16,409,422 have been disposed of by the Federal Government before the first of July, 1868—the latest date of which we have a report. For schools and educational purposes 6,765,404 have been granted; 6,030,814 have been taken under Mexican grants; 500,000 have been granted for internal improvements, 116,382 for railroads and 6,400 for public buildings; 1,198,874 have been sold, 368,321 have been taken under the Homestead Act, 470,452 under military warrants, 580,572 under ‘scrip,’ 343,169 under swamp locations, and 28,129 under Indian scrip. Since June, 1868, nearly 2,000,000 acres more have been disposed of, and 86,000,000 acres of public land in the state are open to occupation. There are 50,000 square miles in the coast valleys and mountains, 50,000 in the Sierra Nevada, 30,000 in the low land of the Sacramento Basin, 30,000 in the Utah Basin, which has no outlet to the sea, 20,000 in the basin of the Colorado River, and 8,000 in the basin of the Klamath.

“Much land in the Utah and Colorado basins, three fourths of that in the Sierra Nevada and Klamath basins, and a third of that in the Coast District may be considered as too rugged or barren to pay for cultivation in this century, with the exception of small patches. There remain 30,000 square miles in the Sacramento Basin, 32,000 in the Coast, 12,500 in the Sierra Nevada, and 2,000 in the Klamath Basin; an aggregate of 95,000 square miles, or 88,000,000 acres, as available for tillage—half of it still belonging to the government. No precise measurements

have been made, but these figures are near enough to give a correct general idea. The area valuable for pasturage but unfit for tillage is half as great.

"The acres of land inclosed number 4,200,000, or about one in sixteen of that suitable for tillage; but only 2,000,000, or one in thirty-two, are tilled. The quantity held in private ownership is not known precisely, for large purchases which have not been reported have been made lately; some Mexican claims are not yet finally settled; and some railroad donations have not been perfected. To the Central Pacific Road, 1,394,000 acres have been granted; and to the Western Pacific, an area which probably does not exceed 500,000 acres of Federal land. The companies have complied with all the conditions of these grants, and have, or soon will have, the patents. The California and Oregon Railroad Company are to have about 2,800,000 acres; but only a small part of the road is built. The Copperopolis Railroad is entitled to 230,000 acres, if built within the period fixed by law. The Southern Pacific Railroad claimed 6,000,000 acres, but has not built the road so as to perfect the claim. We have here a total of 10,424,000 acres claimed by railroad companies.

"The area of the confirmed Mexican land claims is 6,000,000 acres.

"The most fertile land and that nearest to the market is occupied. The present settlers are men of more than ordinary intelligence, and they have sought to get the best. Nearly all the level bottom lands in the coast valleys, from latitude 39° to the southern boundary, are taken up, and so are the best parts of the lowlands in the Sacramento Valley within one hundred and fifty miles of San Francisco, and of the San Joaquin Valley within seventy-five miles of Stockton. All the land on which it is supposed that grain can be grown with a profit, at present, has passed out of the control of the government. But

the future profit depends to a great extent upon the means of transportation, and large districts that are now too far from market will become valuable when they shall have been made accessible by railroads.

"Many districts may pay well when supplied with water by irrigation; and many others without irrigation may pay better in grapes and various fruits than any grain fields.

"It is my confident belief that the hills will pay better in wine, dried fruit, preserved fruit, fresh fruit, and nuts, than the lowlands will in grains.

"Nearly all the land belonging to the United States is offered for sale at \$1.25 per acre, and is called 'minimum,' but in some places all the odd sections within ten or twenty miles of a railroad have been given to the road, and then the even sections are not sold for less than \$2.50 and they are called 'double minimum' lands; and the pre-emptor and homesteader cannot take more than eighty acres of them.

"It is impossible to explain here all the details of the federal land system, but I have given the main points, and the others can readily be learned by inquiry of intelligent farmers in those districts where there are public lands for sale. At least forty out of fifty counties have some public lands, which can be got for \$1.25 per acre; but near the center of the State this unoccupied land is usually hilly or covered with brush, so as to diminish its value. Good farming or grain land in the coast valleys within sixty miles of the Bay of San Francisco is generally worth from \$20 to \$100 per acre—the price being higher in proportion to proximity to navigable water. In the Sacramento and San Joaquin valleys, fertile land not subject to overflow ranges from \$5 to \$20 per acre, except near the larger towns, where it is higher. The prices in Los Angeles County are about the same, except that in the

latter county lands that can be irrigated command a higher figure."

After 1870 many of these great tracts in the Sacramento and San Joaquin valleys that had passed into private hands were devoted to grain, but there were still enormous areas which for various reasons were still used as cattle ranges. A few individuals or companies, however, almost monopolized these lands. Chief of these was the firm of Miller and Lux, the last of whose holdings just now (1928) are being broken up and placed upon the market. A detailed study of the rise of this partnership, the methods by which it acquired its enormous holdings, and the economic conditions which made possible its abnormal growth, would be of the greatest value to an understanding of this particular period of California's economic evolution, but there is not sufficient space for such a study in this volume. It is sufficient to say that the term, "Miller and Lux," came to represent, like that of Collis P. Huntington a little later, the idea of land monopoly and economic domination throughout the San Joaquin Valley. The place in fact and tradition occupied by this firm is well illustrated in the following extract from a description by the traveler, Charles Nordhoff, in 1872.

"On one side of the river (San Joaquin) are wheat fields; on the other you find only cattle. Miller and Lux own forty miles of land on the western side of the San Joaquin, and other persons own almost equally great tracts. It is said that Mr. Miller is the possessor of half a million acres in this State; he has nearly 100,000 cattle. . . . He is eager for more land; and is said to have determined that he will not rest until he can drive his cattle over his own land from Los Angeles to Sacramento.

"Two men in San Francisco saw him sitting somewhere, lost in thought, and one asked, 'I wonder what Miller is



planning now?' The other replied, 'He is making a little plan to buy the rest of the State.'"

The methods of wheat production in California differed radically in many particulars from those in use in the Mississippi Valley. The contrast in climate in part accounted for these differences. The insufficiency of labor in California also forced upon the California ranchers a much greater use of machinery than was customary in the Middle West. As frequently happens, also, when any region proves especially suitable to the production of some particular crop, the ranchers in the grain sections of California for nearly a quarter of a century limited their efforts exclusively to the raising of wheat or barley and made no attempt to develop diversified forms of agriculture. The effects of this restricted policy were noted by many far-sighted observers of that day, one of whom commented upon the situation as follows:

"There are hundreds of farmers in California, men who would be thought wealthy in any farming community in the East, who own several thousand acres, and who do not raise even a potato for their families. Wheat, wheat, wheat is their only crop, and for this every thing else is neglected. Their families live on canned fruits and vegetables; all their house supplies are bought in the nearest town, of the groceryman; in a good season they sell their wheat for a large sum, and either buy more land or spend the money in high living; and when a dry year comes they fall into debt, with interest at one per cent a month; and when the next dry winter comes it brings the sheriff."

Another writer, himself a resident of the state and deeply interested in its development, wrote even stronger in the same vein:

"Probably no equal portion of the earth's surface is so well calculated, from its great variety of soils and climate, to sustain a diversified, and, hence profitable, agriculture,

as California. All the products of the temperate and many of those of the tropical climates, flourish here with equal luxuriance. Nature seems to have marked out this country as the special paradise of the agriculturists, and yet the great curse of our agriculture and the State is the sameness of production—the over production of a few agricultural products. It is a stigma upon the intelligence and enterprise of our farmers that very many of the common necessities of life, and those, too, for the production of which our State is most peculiarly adapted, and which would yield the greater profit to the producer, are constantly imported. The very money received by our farmers for their grain, sold at a very low figure in consequence of over production, is, much of it, exported from the State to pay for these same necessities consumed by themselves. It is a shameful and deplorable fact, that many of the naturally best grain-producing portions of our State have been cropped every year for from ten to fifteen years in succession, with grain, and in many cases with one single unvaried crop—wheat. The result has proved just what the farmers have time and time again been told it would bring about—exhaustion of the soil. In many localities, where once the land yielded from forty to sixty bushels of wheat per acre, it now yields scarcely enough to pay for the labor of sowing and harvesting. What is still worse, many of these improvident grain farmers are disposing of their exhausted lands and moving to other sections to find a virgin soil, which they, in turn, will in like manner exhaust.”

The transition from this stage in California's progress when wheat was king to the more diversified and intensive forms of agriculture was only gradually accomplished. It was effected by numerous factors which can only be enumerated at this time. Chief of these was the construction of railroads which made it possible for

perishable agricultural products to find a broader market, both within the state itself and in the larger cities of the East. The growth of population also increased the price of land to such a degree that it was no longer profitable in many sections to continue to use it for grain. A better knowledge of the peculiar climatic and soil conditions in California; wide-spread recognition of the necessity for irrigation instead of reliance upon dry farming, and the consequent construction of large irrigation systems throughout the state made possible the development of small ranches devoted to fruit, grapes and other diversified crops. The tendency in this direction was also hastened by a falling off in the profits of wheat-farming due to drought, competition from the new grain areas of Russia and the Mississippi Valley and high freight rates, until the average return to the grower in the late 'eighties was only about four per cent.

As a result of these influences the average size of California ranches decreased from 462 acres in 1880 to 397 acres in 1900 and the number of ranches more than doubled, rising from approximately 36,000 to over 72,000, in the same period. In a more detailed way the changes which occurred in the fifty years from 1850 to 1900 are set forth in the following table compiled from the United States Census Reports:

Year	Number of farms	Average size of farms	Acres of land in farms		Cash value of farm implements	Cash value of farms	Value of farm products
			Improved	Unimproved			
1850	872	4.466	32,454	3,861,531	\$ 103,483	\$ 3,874,041	
1860	18,716	466	2,468,034	6,262,000	2,558,500	48,776,804	
1870	23,724	482	6,218,133	5,208,972	5,316,690	141,240,028	\$49,856,000
1880	35,934	462	10,669,698	5,924,044	8,447,744	262,017,282	59,721,425
1890	52,894	405	12,222,839	8,204,454	14,689,750	697,116,630	87,033,290
1900	72,452	397.4	11,958,837	16,870,114	21,311,670	796,527,955	131,610,606

For the most part the smaller ranches, which resulted from the break-up of the large holdings, were planted to

orchards or vineyards. In an earlier chapter brief mention was made of the beginning of the grape industry during the decade of the 'fifties. The success which followed the introduction of European varieties and the more scientific care of the vineyards, led to a reckless period of speculation and over expansion which at one time had all the earmarks of a typical boom. In 1870, according to one well known authority, grape-lands were paying from \$100 to \$2,000 an acre, wine was selling from twenty-five cents to one dollar a gallon and there were 25,000,000 grape vines in the state.

The boom in the industry was checked, however, by the appearance of the destructive French phylloxera and other ills, and in the reaction which ensued most of the novices and speculators disappeared, leaving the industry to men of experience and serious purpose. As a consequence, before the close of the century viticulture became one of the leading and most profitable branches of California agriculture. During much of this period wine grapes were planted almost exclusively in many sections. Until 1885 Southern California, where the grape industry had begun, maintained a position of undisputed supremacy, but thereafter its leadership was challenged by certain regions in Sonoma, Napa and El Dorado counties and in the Sacramento Valley. Los Angeles County was the center of the grape industry in the south but one of the first and largest of the southern vineyards was that planted in the Cucamonga District, a few miles west of San Bernardino. This vineyard, which was originally set out from cuttings from San Gabriel, when "twelve rows of forty-seven vines each" were planted about 1840, contained at least 125,000 vines in 1859. Later came the immense "Italian Vineyard" which now covers 5,000 acres and contains not less than 2,000,000 vines.

By 1890 there were in California 150,000 acres of vine-



yards and 120,000,000 vines. From fully matured vines the yield was normally three or four tons to the acre but under exceptionally favorable conditions it was known to run as high as sixteen. The normal yield, for example, of the sixty-year-old vines of the Lake Vineyard of D. B. Wilson, in what is now the city of San Marino, was from twelve to fifteen tons per acre. It was customary to plant 800 vines to the acre. At that time about half the grape crop of the state was made into wine, two per cent was shipped as table grapes, four per cent made into raisins and the remainder converted into brandy. A ton of grapes would normally yield about 130 gallons of wine.

In part because of the larger sugar content of the grapes, California wines were at first much stronger and less delicately flavored than those from Europe. This was chiefly due to the heavier soil in which the California grapes were grown and to the common practice of irrigating the vines. Gradually, however, it came to be recognized that the poorer hillside lands, although they yielded a smaller quantity per acre and required a larger amount of labor, produced a superior quality of grape for wine-making purposes. By taking advantage of this knowledge and also by the use of more scientific methods in extracting and fermenting the juice, the vineyardists found a much wider market for their product and as a consequence the value of California wine increased from about \$600,000 in 1880 to \$1,700,000 in 1890 and to nearly \$4,000,000 in 1900. By that time the state with a yearly output of close to 19,000,000 gallons was producing over eighty per cent of all the wine made in the United States.

The wine industry, however, was destined before long to be eclipsed by another branch of the grape business. The earliest intimation of this was given in 1872, when for the first time in the United States excellent raisins, or "dried grapes" as they were known at an earlier time,

were produced in commercial quantities. It is difficult to determine who first began the making of raisins in California with the idea of developing a market for them in a commercial way. Perhaps no one should receive such credit, but shortly after 1870 an article, entitled "Lands of the Central Pacific Railroad," contained this interesting item: "A new industry has been developed by Mr. B. N. Bugbey, on a piece of land purchased from the railroad company near the town of Folsom; that is, the cultivation of the raisin grape, and the manufacture of raisins. The process of converting the grape into raisins is so simple that it can be done by children; when the grape is ripe the bunches are cut and spread upon boards in the sun, and turned each day until cured, after which they are boxed and forwarded to market. In 1867, Mr. Bugbey, in addition to making seventeen thousand gallons of wine and three thousand of brandy, also made thirty thousand pounds of raisins."

The immense growth of the raisin industry from 1872 to 1900 is best indicated by the following figures. In 1872 the raisin production was only 60 tons; in 1880 it was 750 tons; in 1890, 19,000 tons; and in 1900, 47,000 tons! Thus, despite the slow progress of the earlier years the industry was on such a sound foundation by the close of the century that forty-three per cent of all the grapes produced in the state were made into raisins and only fifty-three per cent converted into wine and brandy. Large as was the yield of non-wine-making grapes in 1900, however, the real demand for these grapes was not developed until about the time of the World War so that a more extended discussion of the raisin and table grape industry will appear in a later chapter.

During the period under discussion horticulture, like viticulture, was also developed upon an immense scale. A brief account has been given of the early beginnings of

fruit raising which took place immediately after the gold rush. Little progress was made, however, along these lines during the next decade, the value of orchard produce rising from \$754,000 in 1860 to only about \$1,400,000 in 1870. At this time there were less than 30,000 orange, 5,000 lemon, 20,000 olive, and 20,000 walnut trees in the state. The next decade, even with the completion of the railroad and the consequent widening of the market, saw only such a slight increase in horticulture that the value of the fruit crop for 1880 was not much over \$2,000,000. During these earlier years apples constituted the chief California orchard product and in 1880 there were more apple trees in the state than of all other deciduous fruits combined.

The subsequent growth of the canning and dried fruit industries, however, and especially the realization that climatic conditions gave California an unrivaled advantage in the production of certain particular fruits, brought about a marked change in the relative importance of the several varieties before the close of the century. Thus, while the number of apple trees increased from 2,400,000 to less than 2,900,000 in twenty years, the number of peach and nectarine trees in the same period increased from 800,000 to nearly 7,500,000; the number of pear trees from 350,000 to 2,500,000; plums and prunes from 260,000 to nearly 10,000,000; cherries from 130,000 to 700,000; and apricots from 250,000 to 4,250,000. In 1900 California was producing twenty-five per cent of the nation's canned fruits and vegetables, sixty-five per cent of the prunes and plums, eighteen per cent of the pears and ninety-five per cent of the apricots.

Important, however, as was the development of the temperate zone fruit industry in California in the period under discussion, it was very materially surpassed by that of fruits of a semi-tropic character. Of these, the citrus

fruits, of course, were the most important, but the discussion of this industry is reserved for a later chapter. Other important semi-tropic fruits planted on a large scale during this period were the olive and the fig. The olive was one of the first of the trees introduced into California by the early Franciscans and its cultivation on a commercial basis was attempted on a small scale after California's annexation by the United States. But it was not until 1885 that olive culture became a matter of popular interest. Then a small sized boom began and for twelve years olive orchards were planted here, there and everywhere with reckless enthusiasm and very little judgment. As a result the number of bearing trees increased from about 13,000 in 1885 to over 275,000 in 1890 and to 1,530,000 in 1900. Even under the most favorable conditions the market could not have absorbed the yield from so many trees. But the situation was rendered even worse by the competition olive oil was forced to meet from the cheaper salad oils which were just then coming into common use. Unfortunately, too, nearly all of the eighty or more varieties of olives which were grown in California were primarily of the oil-producing type; consequently when the demand for this product ceased the olive industry had little to sustain it. A revival did not set in until after 1910 when the perfection of pickling and canning processes made the fruit itself suitable for eating and thus changed the whole character of the industry.

Unlike the olive, the fig industry developed without spectacular appeal during this period. From 1890 to 1900 the number of trees increased from about 110,000 to less than 190,000. Production of the fruit was restricted both by the fact that fresh figs could not be shipped any considerable distance to market and because at that time California dried figs did not compare with those imported from Smyrna. The great advance of the fig industry to



the place it now holds in California horticulture is a recent development and consequently will be described in a later chapter.

In addition to olives, figs, and citrus fruits, walnuts and almonds became important products of California horticulture before 1900. Both of these varieties of trees were planted in California prior to the Civil War but it was not until the 'seventies that either industry attracted much attention. At that time the almond was being planted on a large scale and it continued to outstrip the walnut during the remainder of the century. The number of almond trees in California as estimated by the United States Census Bureau in 1890 was 650,000. Ten years later it was 1,600,000. The almond, however, was more difficult to grow in most sections than the walnut. The tree is frequently an erratic bloomer and when, induced by a period of warm weather, the blossoms come early in the spring, there is great danger that frost will injure if not destroy the crop. Partly because of this uncertain feature ranchers began to turn more and more to walnuts in place of almonds and by 1900 the latter had fallen to second place. Both the walnut and almond industries, however, were still in their infancy at the beginning of the century and their development to the highly significant place they now occupy is part of more recent history which will be dealt with in a later chapter.

In addition to the development of the grape and fruit industries, which has been discussed in the preceding pages, a beginning was also made prior to 1900 of berry culture, truck farming and the raising of flowers and nursery stock. More important than these was the growth of the sugar-beet industry which began in 1870 with the erection and successful operation of a sugar factory at Alvarado in Alameda County. The initial run of this plant marked one of the first successful commercial ventures in

extracting sugar from beets in the United States. The pioneer company, however, underwent various vicissitudes and it was not till the 'nineties that the industry was on a sound foundation. In 1888 a plant was erected at Watsonville and three years later a similar factory was established at Chino. Other factories were opened at Los Alamitos in Orange County in 1897, at Oxnard in Ventura County in 1898, at Betteravia in Santa Barbara County in 1889 and at Spreckels in Monterey County in the same year. The census of 1900 placed the value of sugar produced at \$1,550,346. The names most prominently identified with the industry during this period were those of the Oxnard Brothers, Claus Spreckels and J. Ross Clark.

It was during these years also that poultry raising, which, relatively unheralded and unadvertised at that time, today ranks only a little below the orange industry in actual value of output, found a place in California. This industry did not assume significant proportions until the 'seventies and it was not till 1880 that it was of sufficient importance to appear in the census. Since that date statistics bearing upon it have been fairly complete and it is therefore possible to present the following table to show both its actual and comparative growth and its present day importance:

(Thousands—i. e., 000—omitted)

Year	Dozen Eggs Produced	Chickens on Farms
1880 (June 1)	5,771	1,426
1890 (June 1)	13,679	3,504
1900 (June 1)	24,444	3,947
1910 (Apr. 15)	40,735	5,666
1920 (Jan. 1)	64,124	10,427
1925 (Jan. 1)	97,907	12,785

During the forty years with which this chapter deals, when California agriculture was passing through various



transitions and acquiring world-wide recognition, it was inevitable that numerous experiments should have been undertaken which at the outset attracted wide-spread interest and promised large profits but in the end left those who engaged in them poorer in purse though somewhat richer in experience. One of the first of these unsuccessful ventures was the production of silk. Because of the initial success of certain experiments in this field prior to 1865 and the backing given to it by the state, a popular interest in silk culture began to develop after the Civil War which soon reached the proportions of a boom. The inevitable collapse came when it was discovered that while mulberry trees did exceptionally well in California no market could be found for the raw silk. The following account in a more picturesque and detailed way describes the meteoric rise and collapse of this particular "boom":

"To encourage silk culture in California, the Legislature of 1866-67 passed an act giving a bounty of \$250 for every plantation of 5,000 mulberry trees two years old, and one of \$300 for every 100,000 merchantable cocoons. This greatly encouraged the planting of trees and the production of cocoons if it did not add to the number of yards of silk in California.

"In 1869, it was estimated that in the central and southern portions of the state there were ten millions of mulberry trees in various stages of growth. One nursery in San Gabriel—the Home of the Silk Worm, as its proprietor called it—advertised 700,000 trees and cuttings for sale, while the nurseries in and around Los Angeles added a million more of *morus multicaulis*, *morus alba* and *morus moreti* mulberry trees to feed the silk worms."

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"As the millions of mulberry trees throughout the state came of age the demands for the bounty poured in on the

commissioners in such a volume that the state treasury was threatened with bankruptcy and the Legislature in alarm repealed the act granting bounties. The immense profits that had been made in the beginning, by selling silk worm eggs to those who had been seized by the craze later, fell off from over-production. The repeal of the bounty put a stop to tree planting. The care and cost of looking after the silk worms exceeded the profits. The trees died from neglect and the silk worms starved to death. The seri-culture mania quickly subsided. Of the millions of mulberry trees that once fluttered their leaves in the breeze scarce one is alive today."

The silk industry was revived in the 'eighties by a group of women who were anxious to build up an industry in which members of their sex might find congenial employment. The early efforts of this group were so successful that it appeared for a time that silk production would become a staple California industry, but this expectation was never realized. There appears no good reason, nevertheless, why silk culture should not some day become an important California industry.

The boom in seri-culture was followed by an equally disappointing though less wide-spread fiasco in tobacco. As early as 1854 a few ranchers were producing small quantities of tobacco for local use, and the rise in prices caused by the outbreak of the Civil War developed unwarranted expectations for this crop. Some years later a process was discovered for curing tobacco which it was thought would overcome the defects caused by the dry climate. As a consequence the production of tobacco which had been 1,000 pounds in 1850, 3,150 pounds in 1860, and 63,800 pounds in 1870, reached the large total of 1,240,000 pounds in 1874. The Culp process, as the new method was called from its originator, proved less satisfactory, however, than was anticipated. The failure,

too, through reckless management of a large tobacco plantation started by the American Tobacco Company increased the general discouragement and added to the growing conviction that California was not well adapted to tobacco culture. As a consequence the production fell from nearly 1,250,000 to only 73,000 pounds a few years later. In 1889 it was less than 13,000 pounds and the census of 1900 omitted it altogether.

A third boom which developed during this period, only to be deflated after extravagant claims had been made for it, was the extensive planting of eucalyptus trees. The seeds of these trees were brought from Australia about the year 1860 and thereafter the eucalyptus was used so extensively for groves, windbreaks, and shade that it became one of the most conspicuous and characteristic features of the California landscape. The introduction of the eucalyptus has been variously attributed to a Mr. Walker of San Francisco; Bishop William Taylor of the Methodist Church; a nurseryman of Alameda, named Nolan, and one or two others. There appears, however, to be no definite historical record as to who actually did bring the first seeds to California; but the names of Ellwood Cooper of Santa Barbara, T. P. Lukens of Pasadena, and Abbot Kinney of Venice are conspicuous among those who first experimented with the eucalyptus on a considerable scale and urged the extensive planting of the trees throughout the state.

The seeds first planted were of the *Eucalyptus globulus*, or blue gum, and early tests showed this species to be thoroughly at home in its new environment. The trees were usually set out singly or in narrow belts and their rapidity of growth gave rise to many exaggerated ideas as to the possibilities of the new venture. Because of the scarcity of timber in many parts of California and the belief that eucalyptus plantations would furnish ties for

railroad use and a hard wood for interior finishing, and for many other purposes, an interest developed in eucalyptus planting which in the period from 1900 to 1910 would probably have led to a much more serious loss to investors had not the Federal government shown conclusively by its experiments that the large profits so freely promised would not materialize. Many of the groves planted during this speculative period still remain and it may be that uses will still be found for these trees besides the production of cord wood.

The discouragements and difficulties which the California ranchers encountered during the period just discussed were almost as varied as the products they sought to raise. Besides the uncertainties presented by drought, the lack of experience in farming under the peculiar conditions existing in California, the normal financing, transportation, labor and market problems always presented to agriculture, there were at times ills perhaps no more serious than those just mentioned, but certainly more annoying, which sprang out of the political and social conditions of the time. These were particularly in evidence in the 'seventies. There is no space here to describe them in detail, but they included such persistent matters as unequal taxes (especially as these were assessed very lightly against the large landholders), oppressive and discriminating freight rates, land monopoly, juggling of land prices and titles by the railroad, the monopoly of water rights, and the absorption of the farmer's profits by middlemen and commission merchants. All of these evils came in for vigorous and at times righteously indignant protest. In 1872, the State Board of Agriculture bitterly declared, "The truth is the grain merchants, the hucksters, the middlemen, the shippers, the railroads, the sack makers, the law makers, the assessors and the tax collec-

tors manage to hold the agricultural classes in a condition of servitude unparalleled in a free country."

It was out of these conditions in part that Henry George's *Progress and Poverty* and the Single Tax program were born and that such movements as the State Grange of Patrons of Husbandry (with a set of objections most of which seem today strangely matter-of-fact) had their rise. But enough has been said in this chapter to show the general trend of California agriculture from the time of the Civil War to the opening of the twentieth century, and to explain the development of certain crops which became especially important during this period. Free grass gave place to fenced ranges; these in turn were converted into grain fields; and as population, railroads and markets developed, the grain fields changed into orchards and vineyards.

Chapter IV



CHAPTER IV

Twenty-five Years of Agricultural Progress

THE PRECEDING chapter traced the broad outline of California's agricultural progress, with the exception of the citrus industry, during the first fifty years of statehood. It is the purpose of this chapter to describe the development of California's agricultural wealth during the quarter of a century just past and to include a survey of the citrus industry from 1875 down to the present time.

The surprising agricultural development which has taken place since 1900 is perhaps best indicated by comparative figures. In 1900 there were approximately 72,500 ranches in the state of an average size of 397 acres; by 1925 the number had increased to 136,400, but the average size, because of factors to be explained later, had decreased to 202 acres. In 1900, 28,828,000 acres were classified as farm land and given an estimated value of approximately \$630,000,000. At the end of twenty-five years the farm acreage, chiefly because of the expansion of cities and the growth of subdivisions, had decreased to 27,500,000 acres, but the value had risen to \$2,800,000,000, representing a gain of nearly 345 per cent. During the same time the value of farm buildings had increased from \$77,000,000 to \$365,000,000, and the combined value of land and

buildings from \$708,000,000 to \$3,165,000,000. The explanation of this tremendous increase in the value of agricultural land is to be found primarily in the transition from the pioneer type of agriculture, with its large ranches operated under a system of dry farming, to the new agriculture of intensive production on small tracts under irrigation.

Undoubtedly the most important, as well as the most distinctive branch of this newer type of agriculture, was the citrus industry. The early beginnings of orange culture have already been mentioned, but no great advance in the production of this fruit was possible until the building of railroads enabled the oranges to be shipped to market. The earliest of the transcontinental railways was opened in 1869, but so far as can be determined, it was not until 1877 that a full car of oranges was shipped to eastern markets, and it was not until February 14, 1886, that the first special train loaded exclusively with oranges left the River Station, Los Angeles, for the East.

Early in the 'seventies, however, a number of ambitious projects had been undertaken for the development of orange culture. One of the most important of these was that of the Riverside Colony which took over a part of the old Rubidoux Ranch lands on the Santa Ana River purchased by the California Silk Center Association some years before when the silk boom was at its height. The following sketch of the beginning and early trials of this colony is given by J. M. Guinn:

"In March, 1870, Judge J. W. North, then living in Knoxville, Tennessee, sent to friends and acquaintances in the Northern States a circular entitled 'A Colony for California.' He outlined briefly what was expected as to the establishment and carrying out of the proposed colony. He said: 'We expect to have schools, churches, lyceums, public library, reading room, etc., at a very early date



and we invite such people to join our colony as will esteem it a privilege to build them.' His invitation met with responses from a number of persons in different States.

"In the summer of 1870, Judge North and several other gentlemen interested in the scheme visited Southern California. After examining a number of tracts of land offered them, in September, 1870, they purchased from the stockholders of the silk-culture association all the real estate (about 4,000 acres), water rights and franchises of that corporation.

"The land was bought at three dollars and fifty cents per acre. It was mesa or tableland that had never been cultivated and so dry that one oldtimer asserted that he had seen 'the coyotes carrying canteens when they crossed it.' The outlook was not very promising. The nearest railroad point was Los Angeles, sixty-five miles distant, and from there the colonists' supplies and building materials had to be hauled on wagons.

"It was easy enough to survey their land and plat a townsite, but to bring that land under cultivation and to produce from it something to support themselves was a more serious problem. Land was cheap enough and plentiful, too, but water was dear and distant. It required engineering skill and a large outlay of capital to bring the two together. Without water for irrigation their lands were worthless and the colony a failure. The colonists set to work vigorously in the winter of 1870-71 to construct an irrigating canal to the colony lands from a point on the Santa Ana River, nine miles distant. Early in the summer of 1871, the canal, at a cost of \$50,000 was completed to the townsite—while the ultimate purpose of the colonists was citrus-fruit culture, the weary outlook of waiting eight or nine years from the seed-planting to fruitage discouraged some of them, and they turned

their attention to cultivating the raisin grape, deciduous fruits and other products that would give returns sooner."

Shortly after the organization of the Riverside Colony, an association first known as the Indiana Colony took over four thousand acres of the Rancho San Pasqual lying along the Arroyo Seco east of Los Angeles and established here both a town and an agricultural settlement. Much of this acreage was planted to orange trees and for this reason the colony took the name of the San Gabriel Orange Grove Association. Within a few years the citrus orchards of this association were acquiring an enviable reputation both for the amount and quality of fruit. The settlement itself, however, attained even greater fame for the attractiveness of its homes than for its oranges. It became the city of Pasadena. Besides these two colonies orange groves were planted about this time, or a little later, in many other districts in Southern California. Notable among these were Redlands, Ontario, Placentia, Santa Ana, Anaheim, Duarte, and San Gabriel.

It was estimated by J. De Barth Shorb, one of the pioneer orange growers of the San Gabriel Valley, that mature seedling trees in 1874 were yielding an annual net profit, over and above commission charges and the cost of transportation to San Francisco, of at least \$20.50 a tree or \$1,435 an acre. The chief market, as intimated in the statement from Shorb, was then in San Francisco, but some oranges, even at that early date, were also being shipped to England, "where they arrived in perfect condition." At that time there were about 90,000 orange trees, a large part of which were not however in bearing, within the state. Nearly 35,000 of these were in Los Angeles County, 30,000 in San Bernardino County, 5,000 in San Diego County, 4,000 in Santa Barbara County and the remainder divided among a number of other districts.

The greatest impetus to the orange industry in this

pioneer period came towards the close of the 'seventies when at the first of a series of annual citrus fairs held at Riverside an altogether new variety of orange was placed upon exhibition. This was the now famous Washington, or Bahia navel, which had been brought to Washington, D. C., from Brazil by the United States Department of Agriculture. Two of these trees, one of which was still living and in bearing as late as 1927, were planted at Riverside by Mrs. Eliza C. Tibbet in 1873. The climate and soil of California proved eminently suited to this variety of orange and it soon attained a perfection unequaled in many ways by any other fruit. The pressing demand for these oranges in the eastern markets and the high prices paid for those which were first shipped from the state led to a period of extravagant expansion and over-production. By 1889 over one million navel orange trees had been set out and at the end of the century some 5,500,000 trees were in bearing.

As was to be expected a great deal of worthless nursery stock, quickly and cheaply grown on inferior roots such as that of the Chinese lemon, was used for the planting of these orchards and many groves were also set out on lands but poorly suited to citrus culture. The most disastrous effects of this wave of unwise expansion were felt in 1885-86 when drought, scale, frosts, and lack of any efficient marketing organization conspired to bring ruin to many of those who had rushed into the business with little or no knowledge of this highly scientific branch of horticulture and without the capital necessary to weather those periods of depression which inevitably overtook the industry from time to time.

Despite losses and discouragement, however, the California orange growers did not lose faith in the possibilities of the industry and by the close of the century methods had been found to overcome many of the most serious

obstacles. The prevention of loss from drought was part of the general irrigation development which was begun at this time and which continued increasingly throughout the first quarter of the next century, but as this subject is discussed in detail in a later chapter it need not be elaborated here.

The second great difficulty, faced by the citrus growers, grew out of the lack of adequate horticultural inspection or quarantine service in the early days of the industry. Because of this lack of protection several varieties of destructive scale were introduced into California with the importation of nursery stock from other countries. In this way the cottony cushion scale (*Icerya Purchasi*) was introduced from Australia in 1868. In twenty years it had spread throughout the orchards of Los Angeles County and the citrus industry there was on the verge of extinction. The following account of the ravages of this pest is not greatly exaggerated:

“The scale multiplied with wonderful rapidity and soon the leaves, branches and trunk of the tree affected were covered with a snowy mantle. The tender twigs died, the leaves turned a sickly yellow, the fruit shriveled and the tree was ruined.

“Then it was that men realized the terrible character of the enemy that was taking possession of the land. Relentless in its march as the ruthless host of Attila—The Scourge of God—it left ruin and desolation in its path. It was not alone trees of the citrus family that were attacked but deciduous trees, vineyards, shrubbery and flowers as well. Costly experiments were tried with sprays, mixtures and emulsions, comprising every deadly poison known to chemistry and science, but no material check was put to the increase of the insect pest. Some of the experiments were effectual, they not only destroyed the *Icerya* but the tree, too. It seemed as if the citrus in-



dustry, built up with so much care and large expenditure of capital was doomed. Orange growers who had been deriving annual incomes of five hundred to a thousand dollars an acre found themselves threatened with financial ruin—not alone their incomes, but their capital, too, suddenly swept away.”

In the spring of 1888 Albert Koebele was sent to Australia by the United States Department of Agriculture to study this pest in its native habitat. The following year Koebele succeeded in introducing into California the *Novius Cardinalis*, a small lady-bird beetle, which preyed upon and checked the scale in its spread and in some localities almost exterminated it. The control of this pest not only brought about an immediate increase in orange production but also gave the growers much needed encouragement in their efforts to place the industry on a sound basis. Other parasites beside the cottony cushion scale appeared from time to time but experiments in fumigation and spraying provided means of combating these dangers and by the end of the century, through constant vigilance and the use of the most scientific methods, the orange growers were assured of success in their struggle against these pests.

Another danger which sometimes threatened the citrus groves was that of frost. The first attempts to counteract this danger date from the early 'nineties when, as a consequence of the rapidly increasing oil production of Southern California, Charles Froude attempted by the use of oil heaters on excessively cold nights to warm the atmosphere above the groves sufficiently to prevent the fruit from freezing. Numerous experiments were made by others along somewhat similar lines, especially after the frosts of 1895. In that year the Riverside Horticultural Club, in cooperation with the United States Weather Bureau, employed a number of smudging devices, heaters,

vaporizers and the like to dispel the frost, and later published the results of these experiments. It was thought at first that coal burned in wire baskets would furnish the most satisfactory method of orchard heating but it was not long before crude-oil heaters and smudges came to be used exclusively for this purpose.

The installation of these heating appliances naturally involved a heavy additional charge upon the growers and as late as 1913 many owners, rather than incur this expense, preferred to gamble on the chance of escaping a destructive frost. In that year, however, California experienced one of its coldest seasons and the damage done the unprotected groves was so disastrous that the value of this form of frost insurance was universally conceded and nearly all the growers took steps to equip their groves with heating and smudging devices of various kinds. As a consequence today only an unusually heavy frost would be of serious danger to the groves.

The difficulties springing out of natural conditions, as has been shown, were not easily overcome by the citrus industry. But a still more difficult problem was that of marketing the fruit, the yield of which was showing a huge increase each year. Serious efforts to meet the situation began in the 'nineties, but success did not come until the formation of the Southern California Fruit Exchange, forerunner of the many California cooperatives.

One of the chief characteristics of the California citrus industry throughout its history is the fact that its control has rested very largely in the hands of men of a high degree of intelligence and of progressive spirit. This fact, more than any other, accounts for the outstanding success achieved in the cooperative system of marketing referred to above, and for the triumph of the growers in their struggle with the problems of production. Men of this type naturally sought in every way to improve the qual-

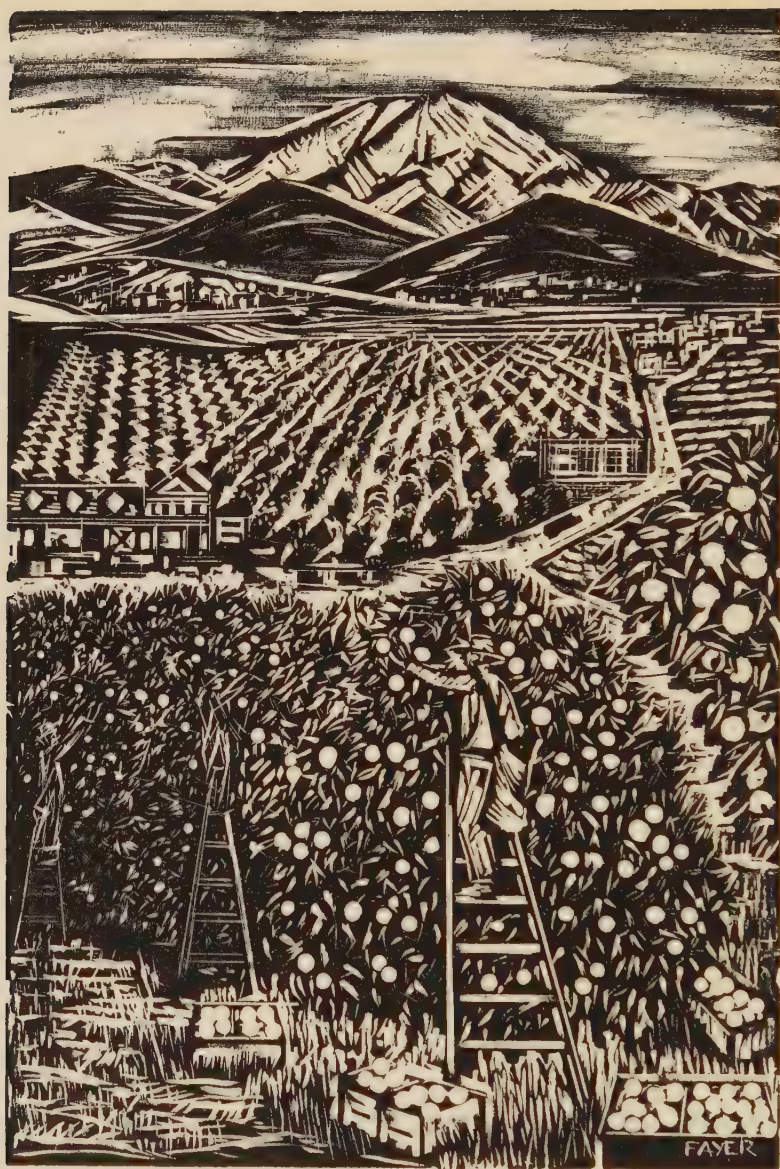


ity of the fruit and to discover those varieties which would best promote the success of the industry. One of the outstanding needs was to find an orange which would mature in the summer and early fall, thus supplementing the Washington Navel which was marketed from December to April, without coming into competition with it. In the orange known as the Valencia, the California growers found this ideal. The early success achieved by this variety was in large part due to the efforts of C. C. Chapman of Orange County who among other things worked out a system of pruning that checked the Valencia's rank growth and enabled the tree to carry a larger burden of fruit than it had borne before, and who educated the eastern public to the value of the Valencia as a summer fruit.

Between 1890 and 1900 lemon growing also came to assume a position second only to the orange industry in importance. Great credit for the development of this branch of citrus culture is due to G. W. Garcelon of Riverside, who spent some fifteen years in seeking to bring the California lemon to a position where it could compete successfully with foreign importations. The two varieties most commonly planted during this experimental period were the Lisbon, the crop of which matured in the winter, and the Eureka, which though it bore throughout the year, had a tendency to set its fruit on the tips of the branches where it was exposed too much to the rays of the sun. By proper pruning, however, this difficulty was overcome, and before the close of the century the lemon industry, like the orange industry, was on an assured and stable foundation. Curing processes had also been discovered by which winter lemons could be held over for the summer market and the quality of fruit so improved that California lemons were decidedly superior to those imported from abroad.

But important as was the growth of the citrus industry prior to 1900, the quarter of a century since that time has witnessed an expansion vastly greater. Even as late as 1909 the production of oranges was only about 5,000,000 boxes and the value of the crop was less than \$13,000,000. Since that time the value of the crop has more than sextupled and the production in 1926-27 came to 28,500,000 boxes. The estimated bearing acreage likewise increased from about 72,000 acres in 1909 to over 197,500 acres in 1927. During these years the lemon industry underwent a similar development. The crop in 1909 was valued at less than \$3,000,000; in 1925 it was valued at \$18,000,000. During the same period the bearing acreage increased from approximately 12,000 acres to nearly 50,000. Geographic expansion has also taken place during these years, especially in orange culture, and today many regions in central and Northern California, as well as the older districts in the south, are recognized centers of orange production. Fortunately for the industry as a whole, the fruit in these more northerly areas, because of the hot San Joaquin and Sacramento valley summers, ripens much earlier than that grown in Southern California and thus is off of the market before the bulk of the crop south of the Tehachapi is shipped.

The factors which led to this immense development of the citrus industry were numerous. None, however, was more important than the cooperative organization of which mention has already been made, effected by the growers through which to market their fruit. In the early 'nineties, as we have already seen, the orange industry was faced by many problems. Not the least of these was the ruinous commissions which the agents and fruit companies charged for packing and selling the fruit and the high freight rates levied by the railroads. During these years many a rancher who had waited seven or



eight years for his grove to come to maturity sold his crop on the trees for less than it cost him to raise it and many a carload of oranges shipped to the East, after paying the railroad and commission merchant, returned the grower only a handsome debt. Indeed it often happened that the larger the crop the deeper involved the owner found himself at the end of the season; and as year after year went by many of the ranchers found themselves hopelessly sunk in this financial quagmire.

To protect themselves from ruin, in the face of these conditions, groups of ranchers in different sections organized themselves into local associations or exchanges, as they were commonly called, to ship and market their fruit on an independent basis. Such an association was the Pachappa Orange Growers' Association formed at Riverside in 1892, and the Orange Growers' Association of Claremont organized the next year. A number of similar bodies were created about the same time at Duarte, San Bernardino, San Antonio, Orange, and in one or two other districts. These associations, for the mutual benefit of the growers, were soon united into the Southern California Fruit Exchange. The expansion of the citrus industry into central and Northern California, in later years, however, made necessary a broadening of this name; accordingly in 1905 it was changed to the California Fruit Growers' Exchange and by this name it has been known ever since.

It is almost a truism to say that this organization has made possible the development of the California citrus industry to its present proportions. It is the largest and most successful cooperative enterprise of its kind in the world, and its influence upon the formation of similar organizations in other branches of agriculture has been of inestimable value. A brief description of its composition and activities is accordingly included here.

The "Exchange," as it is commonly known in California, in 1927 controlled twenty-two district exchanges which in turn comprised over two hundred local packing associations. Its membership consisted of over 11,000 citrus growers and it handled approximately seventy-five per cent of the state's orange, lemon and grapefruit crop. Each of the twenty-two district exchanges elects a representative to serve on the Board of Directors of the Central Exchange, and each local association is represented in the same way on the board of directors of the district exchange. The Exchange is conducted on a strictly co-operative, non-profit basis and renders its services to the growers at actual cost. All the returns for the fruit are paid to the grower after the actual handling and selling charges have been deducted. These are assessed on the basis of so much per box to each of the separate organizations.

The original idea of the Exchange was that of co-operative marketing but as time went on its functions greatly increased. For the more efficient distribution of its products it has built up a sales organization directed from the Los Angeles headquarters that covers the United States, Canada and a number of other foreign markets. Through a field department it gives its members the benefit of the best scientific information obtainable on citrus culture. One of the first results of this policy was the discovery in 1905 by G. Harold Powell of the Bureau of Plant Industry, who afterwards served for many years as one of the directing spirits of the Exchange, that decay was generally caused by the blue-mold fungus entering the oranges through mechanical injuries to the skin. In 1906 a committee was appointed to investigate the methods then in use in the handling of fruit. Thereafter the greatest care was exercised in every process connected with the picking and packing of oranges to keep the skin from being broken.



As a result comparatively little loss is now experienced from decay.

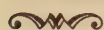
The Exchange also makes careful regulations as to the grading and packing of fruit, thus assuring to the consumer uniform standards both as to size and quality. Through its advertising department, the Exchange carries on an effective educational campaign to acquaint the public with the many uses of citrus fruits and to instruct dealers in their proper handling and distribution. Incidentally the trade-name, "Sunkist," of the Exchange has been heralded so widely that it is now almost a household expression.

A Traffic Department of the Exchange handles the problems of transportation. A Products Department manufactures and markets orange and lemon by-products from the poorer grades of fruit and carries on intensive research in its own laboratories in this field. Finally, to secure the advantage of lower prices and to insure a dependable supply of orchard and packing materials, the Fruit Growers' Supply Company has been organized as a subsidiary of the Exchange. This company now controls more than 70,000 acres of timberland in Northern California and manufactures vast quantities of box lumber, or box shook as it is called, for all the packing houses that belong to the Exchange. The same company also purchases annually for its members over \$10,000,000 worth of nails, tissue wraps, box labels, fertilizers, orchard heating equipment, "pedigreed" budwood stock and similar supplies. In other words the California Fruit Growers' Exchange has applied to this particular branch of agriculture with remarkable success the same methods, the same organization, and the same technical skill that have been used so effectively in the development of American industry and of American business. This success, however, as already stated, could not have been attained if the orange

growers themselves as a class had not been distinctly superior both in intelligence and in cooperating ability.

The surprising development of the citrus industry in California during the first quarter of the twentieth century in many respects was equaled or even surpassed by the growth of the grape industry and of other branches of horticulture. According to the United States Census Bureau, the value of grapes, deciduous fruits and nuts in California for the year 1900 was approximately \$33,000,000; in 1925 the same crops were given a valuation of \$130,000,000. Of this latter sum wine grapes yielded nearly \$23,000,000; table grapes and raisin grapes sold for eating purposes, yielded \$17,000,000; raisins, nearly \$8,000,000; prunes, \$16,000,000; peaches, \$14,000,000; walnuts, \$13,500,000; almonds, \$3,000,000; pears, \$9,000,000; apples, \$7,000,000; apricots, \$7,500,000; cherries nearly \$2,000,000; and plums, figs and olives the remainder. In 1927 almost 800,000 acres in California were planted to deciduous orchards and 660,000 acres to table, wine and raisin grapes.

The success achieved in these branches of horticulture has been due to many factors. Because of climatic conditions complete crop failures are almost never known. Through long years of experience the ranchers of California have come to value, more highly than is customary in many agricultural states, the need for scientific culture, careful and attractive packing, and rigid grading and standardization of fruits produced for commercial purposes. Cooperative marketing, though not so eminently successful in this field as in that of the citrus fruits, has also played an important part in the raisin, prune and walnut industries. Sustained and large scale advertising campaigns have not only created national, and even international, markets for California "Sun Maid Raisins," "Sun Sweet Prunes," and "Diamond Brand Walnuts," but



have also given all California orchard products a unique and highly valuable reputation. The completion of the Panama Canal, by lowering freight rates to the Atlantic seaboard and to Europe, has also given an impetus to California fruit production. But no factor has added more to this phase of California's economic development than the growth of the canning and drying industries. Space is lacking to describe this development in detail but its significance will be apparent from a brief statistical comparison.

In 1899 there were less than 620,000 cases of apricots packed in California as against 3,400,000 cases in 1926; 640,000 cases of pears as against 2,000,000 cases in 1926; 1,100,000 cases of peaches as against 14,000,000 cases in 1926. The total fruit pack for 1899 was less than 3,000,000 cases; in 1926 it fell only a little short of 21,000,000 cases. The dried fruit industry was less uniform in its development than the canning industry but in the case of certain products it was no less remarkable. The production of dried apricots rose from about 14,000 tons in 1899 to 19,000 tons in 1926; that of dried peaches from 17,000 tons to 28,000; that of figs from 3,000 tons to 11,000; that of prunes from 87,000 tons to 150,000; and that of raisins from 36,000 tons to 286,000. During the same period the production of almonds increased from 2,700 tons to 15,700 tons and that of walnuts from 5,400 tons in 1899 to 36,000 tons in 1925. The total output of dried fruits, raisins and nuts for 1900 was less than 138,000 tons; in 1926 it was a trifle over 540,000 tons.

The growth of the canned and dried fruit industry, during the quarter of a century under discussion, greatly exceeded, with one important exception, the increase of production of fresh fruits and table grapes. The latter, however, was by no means insignificant as the following figures will show. In 1900 there were 6,400 cars of Cali-

ifornia fruits and grapes sold outside the state. This number consisted of 152 cars of apricots, 238 cars of cherries, 825 cars of grapes, 1,361 cars of peaches, 2,115 cars of pears, 1,158 cars of plums and 586 cars of other varieties. In 1926 the total shipments reached nearly 79,000 cars. Of this number grapes contributed over 60,000 cars, pears nearly 10,000, peaches 1,600, plums over 5,000, and apricots, cherries and figs much smaller quantities.

It is manifestly impossible, because of the limitations of space, to describe in detail the development of each of the fruits mentioned in the above paragraphs. Except to the student of economic values there is little of interest in statistical summaries and statements of crop production, but back of these seemingly dry figures there is a story full of human interest—a story often of hardship and pioneer experience as when the desert wastes of the Antelope Valley were converted into pear orchards which increased the value of land from two or three dollars an acre to over \$1,000 an acre; a story of patient research and costly experiment as in the case of the discovery of a method of fertilizing the Kadota fig and thus giving a new importance to one of California's oldest fruits; a story often of initial disappointment in the end changing to success, as in the case of the almond industry which after years of minor importance increased 500% in little more than a decade after 1914 because of the development of lands unaffected by late spring frosts. It is a story of lands made fruitful by irrigation, of orchards and vineyards marching forward into grain fields, cattle ranges and even deserts; a story of struggle and patience, having within it the living elements of romance and impossible of interpretation solely by figures of crop production and yearly profit.

Of all the important fruits in California the history of the grape industry has probably been subject to the most

vicissitudes. This has been true both of wine grapes and raisin grapes. The long struggle to put California wines on an equality with those of Europe has been mentioned in previous chapters and the forebodings with which the grape growers greeted prohibition can be well understood. As a matter of fact, however, aside from a brief period of uncertainty immediately following the enactment of the Volstead law, the profits of the wine vineyards—to speak conservatively—do not appear to have diminished as a result of prohibition, but the actual production of wine grapes in marked contrast to that of other varieties has shown virtually no increase during the last ten years.

The growth of the table and raisin grape industry since 1900 has been in some respects the most remarkable aspect of California agriculture. From a yield in 1900 of only 12,000 tons the production of table grapes had risen by 1920 to 166,000 tons and in 1926 came to 366,000 tons. Similarly the output of raisin grapes mounted from 189,000 tons in 1900 to 732,000 in 1920, and to 1,261,000 tons in 1926. This huge increase, both in table and raisin grape production, particularly since the World War when prices were greatly inflated, has resulted in serious loss to the growers. Unfortunately hundreds of acres of vineyards, planted when grape and raisin prices were at a maximum, came into bearing at a time when these prices were already falling and this additional supply for a number of years so completely demoralized the market that many of the ranchers, especially in the San Joaquin Valley, where the bulk of the state's raisin production lies, were financially ruined and the whole industry was faced with the necessity of drastic reorganization. What the immediate future holds for the raisin growers cannot safely be predicted, but the crisis of course is only temporary and differs only in degree from similar periods of

depression suffered from time to time by nearly every other industry in the state.

In the raisin industry, as in the citrus industry, the plan of cooperative marketing and general supervision of production and packing has been put into effect. The association is known as the Sun Maid Raisin Growers of California and its general plan of organization, its purposes and to some degree its methods are similar to those of the California Fruit Growers' Exchange already described. The successful operation of such an enterprise, however, depends wholly upon the ability of a great majority of the growers to cooperate over a long period of time and in an effective and whole-hearted fashion. For various reasons such cooperation has been more difficult to obtain among the raisin producers than among the citrus ranchers, so that the Sun Maid Raisin Growers' Association has faced a particularly difficult task which has not been rendered any easier by the depression already referred to of the last few years.

The grape industry of California for many years has centered to a great degree in the San Joaquin Valley where in 1925 there were upwards of 180,000,000 vines. The vineyards of Northern California at that time contained over 65,000,000 vines and the southern districts, including Imperial Valley, over 24,000,000 vines. In 1910, California, as a whole, possessed about 66% of the grapevines in the United States; in 1920, 69%; and in 1925, 73.5%.

In addition to the fruits already mentioned in this chapter California orchards have begun to produce many other kinds, most of which are not grown elsewhere in commercial quantities in the United States. Only very brief mention, however, can be made of these in this chapter. Olive production, for example, thanks to improvements in the method of pickling which now cares



for 75 % of the crop, has increased from 5,000,000 pounds in 1899 to over 19,000,000 pounds in 1925. Date culture, which is now one of the most distinctive minor industries of the state, began some twenty-five years ago when a few offshoots from date trees in the Arabian desert were planted in the hot, dry Coachella Valley, which lies north of the Salton Sea, much of it below sea-level. The census of 1910 reported a crop of about 3,300 pounds from the trees grown from these first plantings. Ten years later the production was nearly 145,000 pounds and in 1926 it was estimated that the state possessed 500 acres of bearing trees with an annual production of nearly 800,000 pounds. Two associations have modern date packing plants, one at Indio in the Coachella Valley and the other at Monrovia in Los Angeles County. By maintaining high standards of quality and of sanitation in the handling of their product the growers are able to command high prices and an ever increasing market both in California and elsewhere for their fruit.

Another comparatively recent horticultural experiment which has already proved its success is the culture of the avocado. This fruit, one type of which is native to Mexico and another to Guatemala, is extremely rich in oil and may be used in many ways, especially in salads. The taste for it, which often at first must be cultivated, grows upon many persons until it becomes a genuine craving. Because of climatic conditions most of the avocado orchards are found in Southern California and here over 2,000 acres have been planted to this fruit. A co-operative marketing organization known as the California Avocado Growers' Exchange handles the larger part of the crop and serves the growers in many other ways. The market for avocados is apparently susceptible of great expansion and the fruit accordingly should become of increasing importance in the horticultural

development of Southern California. Pomegranates and persimmons are both increasing in popular demand and thus far about 2,000 acres in the state have been planted to each fruit. Other fruits such as limes, guavas, loquats and many others are grown commercially in California, but on a scale too small to warrant discussion at this time.

From what has been said in the preceding pages it is evident that the wide-spread and unique fame California has won as a fruit producing state, particularly in the last quarter of a century, is altogether justified; and although it is difficult to see how the same rate of progress can be continued in the future, it is nevertheless apparent that the maximum horticultural development of the state has as yet by no means been attained. The inestimable advantages which nature has conferred upon California in this field are not to be realized within a single generation.

Though horticulture and viticulture, together, constitute the most financially productive branch of California agriculture, the annual value of the state's field crops is only slightly below that of its orchards and vineyards. The average annual return for the latter for the five years between 1922 and 1926 was approximately \$205,000,000; the average annual value of field crops during the same period was nearly \$179,000,000. The average fruit and vine acreage for the five years was about 1,378,000; that of field crops was 4,700,000, or approximately three and one half times the former.

During the quarter of a century under discussion in this chapter, wheat acreage declined from a high point of over 2,600,000 in 1901 to the low average of less than 400,000 acres for the years between 1909 and 1917. The inflated prices of the war, however, revived wheat farming to such an extent that over 1,000,000 acres were



seeded in 1919, and the average since that time has been something over 600,000 acres. Production since 1900 has fluctuated from a maximum of 34,000,000 bushels in 1901 to a minimum of 4,000,000 bushels in 1913. In 1919 it rose again to over 16,000,000 bushels, and in 1925 was estimated at about 11,500,000. During the same period barley, both in acreage and in yield, has shown very little variation. The former has amounted to about 1,000,000 acres annually and the production has averaged close to 30,000,000 bushels. The maximum yield was 46,500,000 bushels in 1910 and the minimum 15,000,000 bushels in 1924. In 1925 the production was about 32,000,000 bushels. Much of the barley that is not used within the state for feed is shipped to Europe for brewing purposes.

More important by far than the grain crop is that of hay. On an average the value of this crop will equal or surpass the value of all other field crops combined and in many years it will also exceed the value of the much more widely advertised orange crop. Normally close to 2,000,000 acres are planted to hay in California and the yield runs something over 5,000,000 tons. Grain hay and alfalfa are raised almost exclusively. The latter, especially, is of fundamental necessity to the dairy industry and also fills many other essential needs. Alfalfa or Chilean clover as it was once called, is in fact an almost ideal crop for California ranches. Provided water is available it will grow in many soils poorly adapted to other uses. Once established a field may be cut continuously for several years without reseeding and under proper conditions it will yield annually from five to ten tons of cured hay per acre. In common practice the fields are pastured as well as cut. Alfalfa is grown in almost every part of the state, but the largest yield is from the San Joaquin and Imperial valleys. The latter valley in

fact contains more than half the alfalfa acreage of the state and it is largely due to this development that the production of hay in California has almost quadrupled in the last twenty-five years.

Two other field crops that deserve special mention because of the magnitude to which they have developed in recent years are rice and cotton. Prior to 1910 neither of these crops was produced in a scale sufficiently large to merit recognition, though both were objects of interesting experiments in the first decades of the state's history and both were mentioned in early American accounts of California as admirably adapted to the soil and climate of the Sacramento and San Joaquin valleys.

As early as 1870 the desirability of rice culture in the state and the short-sighted indifference of California ranchers to its possibilities were pointed out by the author of a pamphlet entitled, "All About California." "It is one of the strangest things in the history of California agriculture," said this writer, "that the cultivation of this grain, has never been undertaken. We have thousands of acres of land, on the Sacramento and San Joaquin rivers, eminently suited in every respect to the successful and profitable culture of rice. Probably the best explanation for the neglect of this product is found in the general and chronic indisposition of the American—and particularly the Californian—agriculturists to step out of the old grooves and routines of cultivation learned by the examples of their fathers.

"We import and consume from forty million to fifty million pounds of rice annually, in our State, at a cost of about two million five hundred thousand dollars. We have a large population among us well calculated for this industry, and many of them are already skilled in its management. By directing their labor into this channel it might be made to contribute very materially to the



wealth of the State, while, at the same time, the success of the enterprise would tend to stimulate the reclamation and utilization of the hundreds of thousands of acres of tule lands now comparatively worthless."

Despite the fact that there was no good reason, as the writer of the above article pointed out, why rice should not be grown in California it was not until 1910 or a little later that the grain was first planted on a large scale in the lower Sacramento Valley. Here it did so extraordinarily well, both in respect of quality and of yield per acre, that within a few years California had become one of the leading rice-producing states of the Union. From a production of 70,000 bushels in 1912 the California rice crop rose to a maximum of 9,000,000 bushels in 1919 but in recent years this has declined to about 5,000,000 bushels. The average yield per acre has ranged from a minimum of 46 bushels in 1925 to a maximum of 68 bushels in 1917 and only once during the period from 1912 to 1925, has California's record in this respect been exceeded by any other state. In recent years approximately 100,000 acres a year have been planted to rice. As a writer fittingly remarks, "Comment seems baffled by a product which increased ten thousandfold in a decade. It is too sudden and too great to be either fully understood or appreciated."

Cotton production in California was begun in a tentative way as early as the Civil War. A resumé of the rise and fall of the industry in these early years is given in the following paragraphs from J. M. Guinn:

"The Civil War had demoralized the cotton industry in the South and sent the price of raw material booming. The Legislature of California, to encourage cotton growing, offered a premium for a certain number of the best bales produced. About 1866 or 67 Don Mateo Keller, an old resident of Los Angeles, tried the experiment of grow-

ing cotton on irrigated lands. Eighty acres of land lying north of Jefferson Street and west of Figueroa, now covered with fine residences, was planted in cotton. The plants grew luxuriantly and produced abundantly. The bursting bolls whitened the field like the snows of winter in an Arctic landscape. Enthusiastic agriculturists rejoiced over the advent of a new industry and prophesied that cotton would be "King" in California. Don Mateo built a gin and ginned a number of bales that took the premium, but the profits from his venture were not sufficient to induce him to become a cotton planter.

"Colonel J. L. Strong, a cotton planter from Tennessee, in 1870, secured from the Los Angeles & San Bernardino Land Company a lease of 600 acres located on the Santa Ana River in the Gospel Swamp country, a region famous in early times for mammoth pumpkins and monster camp-meetings. On this he planted a large field of cotton. It grew like the fabled green bay tree, and produced fabulous returns, but not in money. On the Merced River bottoms near Snellings was a plantation of a thousand acres, and in Fresno County were a number of smaller ones, aggregating about 500 acres. The California Cotton Growers & Manufacturers' Association purchased ten thousand acres of land adjoining to, and covering part of the present site of Bakersfield, the oil metropolis of Kern County. On account of the difficulty of obtaining seed only 300 acres were planted the first year. A portion of this made a fine crop of excellent quality. The association announced that it would plant 2,000 acres next year; and to encourage planting would furnish growers with seed and gin their cotton free. To secure laborers, the members of the association imported a colony of negro cottonfield laborers from the South, built cabins for them and hired them to plant, cultivate, pick and gin the prospective crop. The colored persons discovered

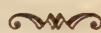
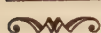


that they could get much better wages at other employments and deserted their employers. The cotton crop went to grass and the cotton growers went into bankruptcy."

It is a singular thing that these eminently successful demonstrations of the possibilities of cotton production, so far at least as California soil and climate conditions were concerned, did not bring about the early development of the cotton industry in the state, but it was not until 1910 that the crop was planted on a commercial scale. In that year 9,000 acres were harvested and the yield was a little over 6,000 bales. The World War greatly stimulated the interest in cotton planting in California and in 1916 over 41,000 bales were produced from 60,000 acres. Four years later as much as 150,000 acres were planted to cotton and production was estimated at 67,000 bales. A decline then ensued for a number of years but in 1925 production reached 122,000 bales from 172,000 acres. The next year the cotton area decreased 10,000 acres, but production rose to over 130,000 bales.

The chief cotton producing regions of the state lie in Riverside County, the Imperial Valley and the San Joaquin. Until a few years ago the last named district lagged far behind the other two, but now it includes from a half to two thirds of the cotton acreage of the state. The Alcala, a medium short staple variety, comprises the bulk of the crop and since 1915 the price of California cotton has uniformly run higher than the average price of cotton throughout the United States. It may be said also in passing that the production of cotton within the state has aided materially in developing large automobile tire factories in Southern California and these in turn have furnished a convenient and ever-increasing market for California cotton.

Beans, another field crop of great importance to Cali-



for California agriculture, are grown chiefly within a short distance of the coast (where the air contains much more moisture than in the interior) from Monterey to San Diego. At first this crop was raised primarily by dry farming but in recent years thousands of acres of bean land have been placed under irrigation and the yield has been correspondingly increased. Although many varieties are raised, lima beans constitute the greater part of the crop. Beans are normally planted late in the spring and harvested in the fall. In this latter process the plants are cut after the beans have matured, raked into piles and allowed to dry. The beans are then threshed, much as grain is threshed, and run into hundred pound sacks. The bean-straw is baled and sold for orchard fertilizer, for which purpose it is in great demand. A large part of the crop is disposed of under a cooperative marketing system similar to that worked out in the citrus industry. The average annual bean production runs from 2,500,000 to 3,000,000 sacks (125,000 to 150,000 tons); the area planted fluctuates between 200,000 and 300,000 acres; and the value of the crop normally ranges between \$12,000,000 and \$18,000,000. Among field crops beans rank next to barley and hay in point of value.

Besides the field crops already mentioned, a number of others such as sorghum, sugar-beets, potatoes, corn and oats contribute materially to the return of California agriculture, but space cannot be devoted to them here.

The increase in value, during the last twenty-five years, of California field and orchard crops previously described in this chapter has been paralleled by the advance made in truck farming and the production of vegetables. In 1900 the value of the vegetable crop was only \$5,000,000; a quarter of a century later it was nearly \$55,000,000. Of this latter amount lettuce contributed nearly \$13,000,000; cantaloupes about \$12,000,000; tomatoes over \$7,000,000;

and asparagus close to \$6,000,000. Excluding lettuce and cantaloupes, a large part of this production, especially in Northern California, is canned for the market, and for the last few years the annual pack has run close to 25,000,000 cases. The chief vegetable and melon areas of the state are the delta regions of San Francisco Bay, the lower San Joaquin Valley, the farming districts adjacent to Los Angeles, certain favored lands along the coast, and the Imperial Valley. All told in 1925 nearly 265,000 acres were planted to vegetables and melons.

Lettuce and cantaloupes are the most valuable of these crops. Much of the lettuce is grown in winter and early spring for shipment to the eastern markets and in 1927 nearly 27,500 cars were required to move the crop. In normal years about half the state's production comes from the Imperial Valley where between 25,000 and 30,000 acres are planted annually to this crop. The same valley also produces over two thirds of the cantaloupes grown in California. Indeed the development of the cantaloupe industry in the Imperial Valley is one of the marvels of California agriculture. At the beginning of the century this valley lay desolate and almost uninhabited, "the most formidable of all deserts on the continent," and the irrigation of this desert by water from the Colorado River after 1900 wrought a transformation which one cannot describe without exposing oneself to the charge of extravagant exaggeration.

The light soil and early growing season of the valley created an ideal condition for the production of cantaloupes. These melons accordingly are now grown in enormous quantities and the entire crop is marketed before the cantaloupes of other regions have matured. The industry is largely controlled by a cooperative organization similar to those already described and uniform standards in grading and packing are maintained. To convey

this highly perishable crop to market constitutes a major problem in transportation. The shipping season lasts only from May to July. During this brief period hundreds of refrigerator cars each day must be loaded, iced and started across the continent. A delay in picking of a few days, or in some cases of even a few hours, will cause the melons to become over ripe and thus bring about serious loss. This can be avoided, consequently, only as the railroad, the growers and the packing houses cooperate in every way to insure the rapid handling and shipping of the crop. Something of the magnitude of the task may be understood from the fact that in 1926 over 14,000 cars of cantaloupes were shipped from the valley, in the space of some sixty days. The town of Brawley, which is the center of the melon district, shipped 6,081 cars of cantaloupes in June, 1927, over the Southern Pacific Railroad, and in a single day 379 carloads were sent from the valley.

Turning now from the various branches of fruit raising and vegetable culture already discussed to the live stock industry, one finds here also a large increase in values since 1900. At the beginning of the century the value of California live stock was fixed at approximately \$70,000,000. Ten years later it had more than doubled this figure and by 1920 it stood at \$230,000,000. The deflation following the war brought about a decrease to approximately \$170,000,000 in 1927. Of this last amount horses, mules and colts represented a value of \$27,000,000; milk cows, \$46,000,000; all other cattle, \$51,000,000; sheep and lambs, \$35,000,000; and swine, \$10,000,000.

In recent years much attention has been given to improving the breeds of live stock and to scientific feeding and care. Associations representing the different live stock industries, the State Bureau of Dairy Control and the Division of Animal Husbandry, the State Agricultural



College at Davis, the United States Department of Agriculture, and numerous local bodies have aided materially in this movement, until today California live stock is of a distinctly superior type and many of its herds have attained national and even international recognition.

The growth of population in California during the last twenty-five years has given a marked stimulus to the dairy industry through the creation of a constantly increasing demand for its products. The value of these increased from about \$3,000,000 in 1900 to \$20,000,000 in 1910; \$55,000,000 in 1920, and \$153,000,000 in 1927. Even with this increase, however, it is still necessary to import large quantities of butter and cheese to supply the needs of the state. The largest dairy centers are naturally located in those sections where alfalfa is grown to best advantage. These include, as already stated, the San Joaquin and Imperial valleys, certain districts around Los Angeles and such valleys as the Salinas and Santa Ynez along the coast. Much milk is shipped to the larger cities for retail distribution and for manufacture into ice cream. The remainder is sold to creameries to be made into butter and cheese.

Poultry raising, like the dairy industry, has also become an enterprise of large proportions during the last two or three decades. The number of fowls has increased from about 4,000,000 in 1900 to 6,000,000 in 1910; 10,000,000 in 1920; and 12,750,000 in 1925. The value of these was placed at \$12,500,000 in 1925 and the annual production of eggs came to ninety-eight million dozen. The industry is one of the most widely diffused in the state and flourishes equally well in such widely separated districts as Petaluma, the San Fernando Valley and San Diego County. In one respect, especially, the social significance of the industry deserves at least a word of comment. Because it can be carried on with relatively

little capital on small tracts of land and when given proper attention furnishes at least a moderate income, poultry raising has attracted large numbers of people of small means who have found in it a more healthful occupation and a greater measure of independence than could have been obtained from employment or trade within the cities.

In the foregoing pages an effort has been made to portray the agricultural progress of California during the past quarter of a century. It has been a development of surprising variety and magnitude. It has added amazingly to the wealth of the state and to the prosperity of its people. Out of it, too, has come a new conception of the possibilities of rural life and the establishment of standards of rural education and culture almost undreamed of a generation ago.

Chapter V



CHAPTER V

The Growth of Industry

THE FAME that California has acquired for its climate, agricultural wealth and recreational advantages in a large measure has obscured the importance of the state's industrial development. It is not generally known, in other words, that California is the eighth manufacturing state of the Union and that one third of her yearly income is accounted for by her factories. As in the case of agriculture, petroleum, and many other major economic branches, by far the greater part of this industrial development has taken place within the last twenty-five years. To understand this more recent growth, however, it is necessary to have some knowledge of the half century of preparation and gradual expansion which lay behind it.

It is unfortunately true that California during the earlier years was greatly handicapped from a manufacturing standpoint by several serious deficiencies. She lacked capital; she lacked sufficient population to furnish a domestic market for the goods she might produce on a large scale; she lacked coal; and she lacked such essential raw materials as iron and cotton. So long also as greater profits were to be made from mining and agriculture there was little likelihood that serious attention would be paid



to manufacturing. Most of the obstacles mentioned above, however, such as the scarcity of capital and the limited local market, were only of a temporary character and as they gradually disappeared with the increase of wealth and population, manufacturing came more and more to rank as an important contributor to the state's economic progress.

Between 1850 and 1870 a material advance was made in the industrial development of California especially during the years of the Civil War when the infant industries of California received unlooked-for protection by the interruption of normal communication with the eastern states.

The larger part of this increase in manufacturing was in industries devoted to the production of articles and goods which had previously been imported to a great extent from the Atlantic seaboard. Among these items the most important were boots, shoes, clothing, chemicals and drugs, furniture, iron and steel, distilled liquors, soap, candles, and tobacco. The development of agriculture also brought about an increased production of leather goods and the growth in urban population led to the beginning of many necessary local industries such as gas plants, planing mills, and brick, tile and pottery works.

Despite the progress made in industrial development during the decade of the 'sixties, however, California in 1870 could not appropriately be called a true manufacturing state. A picture of the conditions which actually prevailed in this field, of the characteristics of California's industrial life and of the handicaps which remained to be overcome, is given by a writer on economic matters early in the 'seventies as follows:

"The factories of California are few and small, relatively high wages make it impossible to compete suc-



cessfully with the cheap labor of the Eastern States and Europe except in a few articles, most of which are bulky in proportion to cost or inflammable.

"We make blankets, flannels and cheap cloths, because we have an abundance of fine wool, on which by working it up here we can save freights to and from New York, three or four commissions, and ten months' time. Yet we export more than three fourths of our wool, and import all our fine cloths, delaines and worsteds. On the same principle we tan hides and make coarse boots; but we export hides and sole leather and import fine boots, calf-skin and morocco. Furniture, tubs and coarse baskets are made here. Hemp rope is manufactured here because the material comes from Manila, and can be got here cheaper than in New York, and the freight is high compared with the cost. Printing paper we make because we have rags to export. Straw paper is very bulky and cheap and is made here. Turpentine is inflammable and costly to freight, so we produce it from the pitch of our forests. Resin is made because its production costs very little when turpentine is distilled. We have an abundance of broom-corn and on account of the luxuriant growth of the plant can make brooms cheaper and much better than those imported. The refuse of our slaughter-houses furnishes cheap material for coarse soap and glue, which we make in abundance. Coarse pottery and tin and copper-ware can be made for less than the freight from New York. Common matches, acids, blasting powder, and giant powder or dynamite, are so dangerous to ship that the high freights protect production on our coast. Shot and lead pipe are made from lead obtained in Nevada and Arizona. The old wrought-iron, which was formerly exported, is now sent to our rolling mill, which obtains its material cheaper than do similar establishments in the Eastern States. The salt obtained on our

coast is ground, and the rice imported for Chinamen is cleansed, in San Francisco mills. The sugar from the Hawaiian Islands is refined here for the consumption of the coast. The coarse bottles are made at home, but the fine ones are imported. The wire rope which is made to the order of the miners is twisted here. One cotton mill makes coarse muslin. A silk weaver has commenced work in San Francisco, and he will probably thrive by confining his operations to a small scale for several years. We make one hundred billiard tables and one hundred and fifty pianos annually. The tables cannot be transported entire, and it is cheaper to make them here than to import them. Planing mills and sash factories, of course, we have; and the Chinese have gone extensively into the making of cigars.

"According to the United States Census Report of 1860, California had, in that year, 3,505 manufacturing establishments, with a capital of \$23,682,593, employing 24,266 persons, consuming raw material worth \$16,558,636, and producing manufactured articles worth \$59,500,000.

"The additional value given to the raw material by the manufacturers was \$42,912,000. Flour and lumber are the two largest items, and, together, make up more than \$8,500,000 of manufactured product, and malt and distilled liquors made \$1,500,000 more. Since 1860, there has been a great increase of manufacturing industry, and many articles then imported are now made here, including tallow, boots, shoes, woodenware, candles, many varieties of furniture, gas meters, glass, hose, belts, glue, lasts, linseed oil, matches, saws, sashes and doors, tools, type, vinegar, and wire goods. Santa Cruz has a number of tanneries. Santa Cruz and Marin counties have each a powder mill and a paper mill; Oakland has a cotton mill; Sacramento a beet-sugar mill; Sacramento, Marys-

ville, Stockton, San José and Merced Falls have each a woolen mill; every large town has its planing mill, foundry and brewery; and distilleries, and flour, saw and quartz mills, are scattered through the respective grape, grain, lumber and mining districts. But, with these exceptions, nearly all the manufacturing establishments are in San Francisco."

The industrial history of California for thirty years after the above description was written was naturally affected by those factors which influenced the course of the state's general economic development. The opening of railway transportation both to the East and throughout the state itself made raw materials much more accessible and widened the market for the local factories. At the same time many of the California industries which had developed under the abnormal conditions of the Civil War once more found themselves in competition with eastern manufacturers who again were able to ship goods to the Pacific Coast, now by rail, however, as well as by water. The depression and discontent of the 'seventies were also reflected in many ways in California's industrial life. They were especially manifest in labor agitation, the development of labor organizations, the injection of industrial issues into politics, and a bitter opposition to Chinese immigration.

During this period the increase of wheat farming led to an expansion in the flour and milling business, and the general development of agriculture brought about the establishment of a number of plants devoted to the manufacture of farming implements, wagons, and the like. The growth of the fruit, grape, and vegetable industries similarly created a demand for canneries, wineries and conserving factories. Lastly the increase of population from 850,000 in 1880, to 1,200,000 ten years later, due in part to the feverish activities which characterized the

Great Boom of 1887-1888, brought about a greater demand for local products, furnished much needed additional capital, and increased the supply both of skilled and unskilled labor. As a consequence of these various factors, the census of 1890 reported almost twice as many manufacturing establishments in California as existed twenty years before, the capital invested was nearly four times that of 1870, and the value of manufactured products was more than three times as great.

The early years of the next decade, due largely to the collapse of the real estate boom of 1887 and the financial panic of 1893, marked a period of stagnation in California's industrial life. Before the close of the century, however, this depression had given place to a new advance and by 1900 there were 12,500 manufacturing plants in the state, representing an increase of 70% for the decade; capital invested in industrial enterprises was placed at \$205,000,000 as against \$147,000,000 ten years before; and manufactured products were valued at \$303,000,000, or \$90,000,000 more than in 1890. The industries with an annual output of \$10,000,000 or more in 1900, named in order of importance, were as follows: Sugar and molasses refineries; lumber mills; slaughtering and meat-packing plants; flour- and grist-mills; fruit and vegetable canneries; foundries and machine shops; clothing factories; and printing and publishing establishments.

Since 1900 the development of California industry has progressed so rapidly and along such varied lines that it is not altogether inappropriate to style it a true industrial revolution. The major features of this more modern development will be discussed in the remainder of the chapter, but from this survey petroleum refining is omitted because it is dealt with at length in another chapter.

From an industrial standpoint the first quarter of the century falls naturally into three divisions: the decade

and a half prior to the World War; the abnormal period of war-time activities; and the ten years subsequent to the Armistice. During the first of these periods the number of manufacturing establishments in California increased nearly 100%; salaries and wages advanced from \$47,000,000 to \$141,000,000; capital invested rose from \$175,000,000 to \$736,000,000; the value of the finished products increased from \$257,000,000 to \$713,000,000; and the value added by manufacture was placed at \$265,000,000 in 1914 as against \$92,000,000 fifteen years before.

During the feverish years of the Great War, California, in keeping with the general trend throughout the country, experienced a period of forced industrial expansion. In 1919 there were nearly 300,000 persons employed in manufacturing as against 175,000 five years before. Salaries and wages in excess of \$380,000,000 were being paid by industrial organizations; capital invested amounted to over \$1,200,000,000 and the value of manufactured products fell only slightly short of \$2,000,000,000. Measured by this last item California now stood eighth among the manufacturing states of the Union, and in the number of industrial wage earners ranked eleventh.

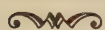
From 1919 to 1925, after the inevitable shock of deflation and readjustment had passed, the industrial development of California not only continued to show substantial progress but also took on certain characteristics which gave it a stability and breadth it had not previously known. The gross value of manufactured products rose in 1925 to nearly \$2,445,000,000 and the value added by manufactures to almost \$1,000,000,000, or about one third the total annual income of the state. The significance of this fact is of course apparent. To her natural resources of climate, agriculture, minerals, timber and the like, California had at last added the essential factor

of manufacturing. Her economic evolution, which had run along lines common to many youthful lands, had now made a new and significant advance. The state's first great industry, mining, had given place to stock raising; this in turn yielded the position of leadership to grain raising; grain raising in turn gave place to diversified agriculture; and agriculture was lastly compelled to recognize the rivalry of manufacturing.

In seeking to explain this remarkable industrial development of California during the last twenty-five years, it is well to remember that manufacturing is "controlled and determined by the fundamental factors of raw materials, power, labor, transportation and markets." The growth of agriculture, especially the increased production of fruits, vegetables and cotton; the huge gain in the output of petroleum; the exploitation of clay, cement and kindred deposits; the importation of basic materials, such as rubber, and of semi-fabricated products, such as automobile parts, all these have supplied the raw materials for California factories in an ever increasing stream.

Lacking coal, one of the primary sources of power, the state has built its industrial life on three substitutes—petroleum, electricity (generated both by water-power and steam), and gas. The steady increase of population, chiefly brought about by the influx of residents from other states but also to some degree by immigration from abroad, has furnished the needed supply of labor, both skilled and common. The increased efficiency of railroad operation, the building of the Panama Canal, the improvement of California harbors and expansion of oceanic shipping, and lastly the remarkable development of the state's highways have met the need for adequate transportation.

Markets for California's industrial products have been provided by many different factors. Such things as Cali-



ifornia motion picture films, canned fruits and vegetables and petroleum products are known and used throughout the world. The demand for many commodities in the Pacific Coast and Rocky Mountain states and throughout the whole southwest is supplied by California factories. An increasing market for California industrial products is also being found in the Orient and among the Latin-American states, but this trade as yet is only in its infancy.

When all is said and done, however, the greatest market for California manufactured products is California itself. The diversity and value of this market are due primarily of course to the increase of population, to the high average purchasing power of the state's inhabitants, and, in a much less degree, to the large number of visitors or tourists—to use a word now fast becoming obsolete—who annually come to California. As California Chambers of Commerce are prone to point out, every new resident means a new mouth to feed, a new body to clothe and house, a new set of wants to be satisfied. The demand for lumber, cement, steel and other building materials for houses, stores and office buildings, which results from a rapid growth in population and an expansion of wealth, is merely one illustration of the influence of these two factors upon basic California industries.

A second powerful influence in the development of a demand for California manufactures has been the automobile. The effect of this single factor, indeed, has been almost revolutionary and its ramifications extend to so many branches of industry that it would be almost impossible even to catalogue them. For the products directly related to the industry, such as tires and accessories of every kind, the annual value of which reaches many millions of dollars, the automobile has of course been directly responsible. It has also led to the erection of huge as-

sembling plants for automobiles and of factories for the production of trucks and tractors. For the development of the petroleum refining business, and for all the lesser industries such as the manufacture of oil-well supplies, gasoline pumps and the like, which in turn are dependent upon this parent industry, it is also responsible. Indirectly, but not the less surely, it has led to the enormous consumption of cement and crushed rock products used in the construction of paved roads; and to the development of almost innumerable minor enterprises which directly or indirectly depend upon the automotive industry for their existence.

A third major factor in the development of a domestic market for California products is the long distance which separates the state from the manufacturing centers of the East. Many products, accordingly, can be made and sold in California cheaper than they can be shipped in from the East. As a consequence of this situation not only have innumerable local industries been developed to meet the domestic need but many of the largest industrial corporations in the United States, such for example as rubber companies, have established branch factories in California to supply the Pacific Coast markets.

Another factor which has had a direct bearing upon the development of manufacturing in California is that of climate. Because of the traditional attitude of the Californian toward this subject, one touches upon it with a certain degree of hesitation. Its economic influence, however, is so unquestionably great that one may not altogether ignore it in a volume of this character. Climate in fact is probably the greatest single cause for the increase of California's population; it is an advertising asset of incalculable value; and from an industrial standpoint it affords certain advantages which are of peculiar merit. The motion picture business, for example, which is one





of the state's largest and most valuable industries, was established originally in California and developed here rather than elsewhere primarily because of climatic conditions.

What occurred in the case of motion pictures will probably not be duplicated to the same degree in the development of the air craft industry, but already because of its climatic advantages for flying, experimentation and air craft manufacturing, California is coming to be recognized as one of the important factors in this new field. Already the manufacture of airplanes, especially in San Diego and Los Angeles, has reached a place of considerable importance. With the growth of the industry as a whole, this particular business, for which California appears so peculiarly suited, should become one of the most important and distinctive industries of the state. Indeed already certain enthusiasts are prophesying that Los Angeles will hold to airplane manufacturing the same controlling place that Detroit now has in the automobile field.

Even in more ordinary lines of industry than those of the airplane and the motion picture film, climatic influences are worthy of consideration. On this subject the opinion of a manufacturer with experience both in other states and in California is worthy at least of consideration. After stating that he found an increased efficiency in California among factory employees because of climatic conditions, the statement continues: "It is never too cold to do any sort of work, inside or outside of buildings, whether heated or otherwise, and even in the summer we have never noticed the slightest slowing up in any of our departments.

"We attribute this to the fact, in the first place—that the oppressive, sultry summer days of the East are unknown here. In spite of the fact that some of our men are



working continually around hot kilns, we have never had a case of heat prostration. The quality of the heat is different. In the second place, the nights are sufficiently cool the year around so that the workmen can get their full quota of rest and report for work in good condition every morning. Another very important factor is the morale of the average workman. It is distinctly higher than in any other section of the country where the writer has had experience.

"After a man has lived here sufficiently long to become acclimated, he begins to realize that he is getting more out of life than he has been accustomed to; his family are all happy and healthier, and we sincerely believe he gradually acquires a higher regard for the job which permits him to live in these more pleasant conditions. While this may seem a bit theoretical and intangible, it nevertheless is an important factor in securing maximum efficiency."

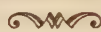
A significant feature of the industrial development of California during the last twenty-five years is the growth of new manufacturing centers and the shifting of leadership in this field from San Francisco to Los Angeles. In 1900 San Francisco ranked first among the manufacturing cities of the state and was producing seven times the value of the goods made in Los Angeles, its nearest rival. Sacramento, Stockton and Oakland followed next in order named. The earthquake and fire of 1906, together with major political and labor troubles, seriously retarded San Francisco's industrial development and caused a considerable migration of manufacturing across the bay. Accordingly, in 1910, San Francisco showed but little increase in manufacturing over 1900. Los Angeles, however, had an advance of 100% and Oakland had moved forward into third place. Seventeen other cities in the

state had a population of over 10,000 and in all of these some manufacturing was carried on.

The demands created by the World War ushered in for California, as for every other state where manufacturing existed, a period of feverish activity, and the value of the state's industrial output rose 170%. Such cities as Oakland, Long Beach and Vallejo showed an increase during these years of from 400% to 500%, but Alameda topped them all with an increase of 1000%. With the close of the war a number of industries, one of the foremost of which was ship-building, began an abrupt decline, and this depression combined with the decrease in prices characteristic of the deflation period, materially lowered the value of California manufactured products.

After this temporary falling off, however, industry again moved forward and in 1925 the value of manufactured products showed an increase of 28% over that of 1919. During the same period the increase for the United States as a whole was only 1.5%. In the year just mentioned (1925) Los Angeles ranked first among California cities with an output valued at more than \$500,000,000, a pay roll of 58,000 and an annual expenditure for wages of \$86,000,000. San Francisco came second with \$400,000,000 worth of manufactured goods, a payroll of 40,000 and an annual wage outlay of \$60,000,000. Third in rank stood Oakland with a yearly output of \$145,000,000 and wages of \$22,000,000. Richmond, an oil and sugar refining center, with a production of \$66,000,000, came fourth.

The marked growth of manufacturing and its more even distribution between the San Francisco Bay region and Southern California, as already stated, are only two of many characteristics worthy of note in the last twenty-five years of California's industrial history. Another feature of especial significance is the fact, suggested ear-



lier in the chapter, that in recent years manufacturing in the state has passed through the period of adolescence, when its horizons were restricted by the narrow bounds of local demand, to full-grown and vigorous maturity. At the close of the nineteenth century the manufacturing industry in California was primarily an adjunct of agriculture and did little more than satisfy local demands for articles and goods which could be produced within the state more cheaply than they could be shipped in from the outside. Twenty-five years later this condition had radically changed and the products of California mills and factories were finding an outlet in national and even international trade. It is this change, from an industrial life composed chiefly of small factories designed to meet local needs to an industrial life comparable in every essential particular to that of the other great manufacturing states, that differentiates the California of today from the California of 1900.

Among the manufacturing industries of California, five rank as most important. Foremost of these is petroleum which now contributes nearly 15 % (as against 3 % in 1910) of the total value of the industrial output of the state. In 1925 California refinery products were valued at \$370,000,000 and the state ranked second in this industry among the other states of the Union. The history of petroleum development in California, however, has been given in some detail in chapter six and need not be further entered into here.

The second most important California industry is that of canning and preserving. This includes fruits, vegetables and fish. It is one of the oldest and most widely distributed industries of the state and a highly essential adjunct to the development of agriculture. In 1900 it ranked fifth among California industries and contributed only 2% to the value of the state's total industrial out-



put. Today the State of California ranks second in the industrial list and produces 8% of the annual value of all manufactures. In this industry California so far surpasses all other states of the Union that she finds among them no competitor. Of all the canned and preserved fruits and vegetables produced in 1925 in the United States 29.3% came from California and only 9.2% from New Jersey, the state next in line. In that year the value of these California products was something over \$200,000,000. Of this amount canned and dried fruits contributed over \$140,000,000; canned soups and vegetables were valued at nearly \$30,000,000, and canned fish at nearly \$16,000,000. Miscellaneous products made up the remainder.

Certain branches of the industry—notably that of the dried fruit business—are in large measure controlled by cooperative organizations controlled and operated by the growers. The extensive advertising carried on by these organizations, and by the larger private companies as well, has made many of these California brands household words throughout the country.

The previous chapter dealing with agricultural development presented statistics covering the progress of the canning and drying industry for fruits and vegetables in California and these need not be repeated here. The sea food branch of the industry, however, which has been increasing in importance in recent years, deserves a further word of comment. The California sardine (together with a species of herring and anchovy packed under the name of sardine), and several related kinds of fish commonly known as tuna, are the principal canned sea food products of California. Monterey, San Diego and Los Angeles are the chief centers of the industry. The Monterey canneries pack chiefly sardines; those of San Diego and Los Angeles pack both sardines and tuna. Southern California, indeed, has almost a world monopoly in the



commercial production of "tuna fish," and the Los Angeles Harbor District is now the largest fish-packing and fish-distributing center in the United States. It should also be added that fish-meal and fish oil are highly profitable by-products of the canning business. Incidentally much of the fish used by the Los Angeles companies is obtained from Mexican waters off the Lower California coast.

The third most important California industrial product is lumber. Under this head, for the sake of convenience, planing-mill products as well as lumber products proper will be included throughout this chapter. In 1925, 14.1 % of the nation's timber stand, or an estimated total of 290 billion board-feet, were contained in the forests of California. The state was then producing about two billion board-feet annually and ranked sixth in the United States in lumber output. With the exception of redwood, 95 % of which is cut in California, the lumber produced in California supplies only about a third of the need of the state (where the per capita consumption is three times that of the United States as a whole) and the other two thirds are imported chiefly from Oregon and Washington. Much of this is in the form of timber which is converted into lumber in the California mills. Siskiyou, Lassen, Butte, Tuolumne, Fresno and Plumas are the chief lumber producing counties in the pine belt and Humboldt and Mendocino produce almost all the redwood.

The value of California lumber and timber products in 1925 was nearly \$73,000,000, and that of planing-mills products was \$69,000,000. If to these figures the value of certain allied industries, such as furniture (\$37,000,000), wooden packing boxes (\$10,000,000) and paper and wood pulp (\$13,000,000), should be added, the total value of California lumber products for 1925 would amount



to \$238,000,000—a sum greater even than that represented by the canning and drying industry.

Next to the lumber industry, measured by the value of its products, is that of the meat-packing and slaughtering industry. From a total of something over \$5,000,000 in 1899 the value of this industry rose to \$92,000,000 in 1919 and to \$116,000,000 in 1925. To this last mentioned sum Los Angeles contributed \$30,000,000 and San Francisco \$20,000,000. The other important centers of the industry are San Diego, Fresno, Sacramento and Oakland. To meet the needs of this industry much live stock is annually shipped into California to augment the local supply. A number of the large nationally known meat packing firms have established branches in California and the industry is conducted in every essential particular as it is in Chicago, Omaha or Kansas City.

The machine shop and foundry industry, despite the lack of coal and iron in California, has progressed from an output valued at \$12,000,000 in 1899 to one of \$80,000,000 in 1925. Los Angeles and San Francisco in order named are the chief centers of this industry. Until recent years the California foundries relied very largely for raw material upon scrap and pig iron imported from England or Belgium. Latterly, however, pig iron from Utah has come to be the chief source of supply. It is believed, moreover, that certain high-grade iron deposits in Southern California will eventually be able to furnish ore which with coke from Utah and Colorado and fluxing material locally obtained can be converted into pig iron for the California foundries.

Other important industrial products which can only be mentioned in passing but which swell the wealth of California and help to meet its varied needs, include, in 1925, motor vehicles (\$78,000,000); printing of newspapers and periodicals (\$78,000,000); bread and bakery products

(\$68,000,000); butter, cheese and condensed milk (\$56,000,000); flour, feed, etc. (\$38,000,000); and book and job printing (\$37,000,000). Some eighty other industries will also be found listed in the Appendix. Both because of its economic significance and the unique reputation it enjoys, the closing pages of this chapter have been reserved for a brief description of the rise and progress of the motion picture industry in California.

It is sometimes hard to determine which is the more spectacular—the rise of a city or that of the industry which gives it birth. Certainly it is difficult for one not acquainted with California's Aladdin-like changes to realize that in 1901 the place called Hollywood—now known to the four quarters of the earth—was a mere cross-roads on the way from Los Angeles to Santa Monica, chiefly famous as the home of the French artist, Paul de Longpre. In 1903 the 166 adult males living in this place of grain fields and orange groves by a vote of 88 to 78 decided that the town of Hollywood, with its 700 inhabitants, should be incorporated. It is further interesting to note that one of the first ordinances of the new government made it a misdemeanor to drive bands of more than 2,000 sheep through the city streets! As late as 1909 there were but 4,000 people living in Hollywood. Livery stables took the place of the modern garages and the event of the day was the departure and arrival of the Toluca stage which connected the old community center at Cahuenga and Hollywood with the San Fernando Valley. Assuredly it would have taken a rash prophet in 1910 when the city was annexed to Los Angeles to predict that fifteen years later it would become the production center of one of the largest and most unusual industries of the world and have a population of some 125,000 people.

A volume would be required to tell of the crude beginnings and gradual development of the motion picture idea.



The experiment undertaken with a trotting horse by Muybridge and Isaacs to settle Stanford's famous bet; the contributions made by the artist, Messonier; the invention of a flexible film by the minister, Goodwin, and George Eastman of the Eastman Kodak Company in the late 'eighties; and the primitive "peep-show" arrangement evolved by Edison and Dickson are too well known to require further comment.

The introduction of the motion picture show into California came, as nearly as can be determined, in 1896 when T. A. Tally opened a "Phonograph and Vitascope Parlor" at 311 South Spring Street in Los Angeles. Tally had as his equipment "the Kinetoscope or Edison peep-show pictures, the Mutoscope peep-show, and an exhibition of the Vitascope on the screen, all accompanied by music from the phonograph. For some reason his patrons were not inclined to go into the dark room where Vitascope pictures were shown, so Tally fixed a partition with holes. In this way people could sit on chairs or stand up in a lighted room and look through holes at the screen. This first Los Angeles Motion Picture Theater had a capacity of seven, three chairs and four peep-holes for those who preferred to stand."

During the late 'nineties and the early years of the next century the process of making motion pictures underwent a number of material improvements. The industry, however, was still of little consequence and especially in California its significance was as yet wholly unperceived. Not until 1907 were pictures actually produced within the state. In that year the Selig Polyscope Company began to take pictures in and about Los Angeles, but as one writer has said, the great industry which this pioneer venture presaged was then represented by "a solitary Selig camera mounted on Castle Rock, near Santa Monica. Monte Cristo, haggard and worn, stood amid

the swirling waters and marshaling his feeble physical forces cried in wild triumph, 'The world is mine.'"

Within a few years after this small but melodramatic beginning, nearly every motion picture company of importance had established a producing studio somewhere in Southern California. These earlier companies included the Selig, Essanay, Bison, Pathé, Biograph, Kalem and Edison, and studios were opened in Santa Barbara, Niles, San Rafael, San Diego, Long Beach, Edendale and Santa Monica, as well as in Hollywood. A little later motion picture cities such as Inceville, on the beach north of Santa Monica, and Universal City, across the Cahuenga Pass from Hollywood, were established.

By this time "the movies" had captivated the popular imagination. Costly theaters were being built. Fabulous salaries were being paid to motion picture stars. The names of Mary Pickford, Douglas Fairbanks and Charlie Chaplin were becoming more widely known than the names of Prime Ministers and Kings and Presidents. Feature pictures, first conceived on a colossal scale by the bold imagination of David Wark Griffith, were being produced with a prodigal expenditure of money seldom witnessed in the history of any other industry.

It is not possible, and fortunately it is not necessary, to trace the development of the industry from these early days of its first great triumphs down to the present time. Improvements in technique, revolutionary methods of lighting, discoveries affecting the processes of photography, developing, and projection, competition of the most ruthless kind between companies, the creation of gigantic combinations, an intense struggle for the control of distribution, and the organization of theater chains reaching from coast to coast—these are only part of the material out of which the history of the motion picture industry in the United States will eventually be written.





The widely ramified and vastly complex activities of the motion picture business make any attempt to describe the industry, solely from the standpoint of California, an impossibility. Its studios may be located in Hollywood, but its headquarters offices are in New York. The current assets of a company may be placed at \$30,000,000, but what part of these shall be listed as peculiarly belonging to California?

Certain things, however, of a more or less general character may legitimately be said regarding those features of the motion picture business which are peculiar to California. As already stated, Hollywood and its vicinity furnish the center for the production end of the business and no cities since time began ever received more free or more world-wide publicity from an industry than Hollywood and Los Angeles have received from motion picture films. All but three or four of the major studios in the United States are located within an hour's ride of this center. Over 70,000 persons are employed in one capacity or another, directly or indirectly, by these companies. Some of the larger studios are operated on a budget of \$400,000 a week. Feature photoplays alone are produced annually to the number of seven or eight hundred. Some of these may cost only a few thousand dollars and others will run above a million. Millions of dollars annually—but how many millions there is not sufficient data to determine with any accuracy—are spent in Los Angeles by those who draw their salaries and wages from these studios, and many millions are spent by these studios in purchasing the innumerable supplies which are required to operate their business. An account of one of these great studios given in 1926 by William A. Johnston, editor of *Motion Picture News*, will serve to show something of the economic importance of this phase of the industry to the state.

“The most recently built studio in Hollywood cost

\$2,000,000 and comprises twenty-three buildings with over 350,000 feet of floor space. In addition are bungalows, sheds and minor buildings. A large administration building houses the production chiefs, the supervisors, directors, writers, business and casting offices. To the rear are the carpenter, metal and plaster shops, dressing rooms, property and wardrobe departments. Then the large stages themselves, and about them open spaces, with streets and a variety of structures for outdoor 'locations.' The streets are concrete paved. Forty-eight acres of land are utilized.

"The stages, measuring 240 by 135 feet, are equipped with great overhead tramways, for handling the arc and mercury vapor lights; the floors are heavy enough to support trucks.

"The electrical plant has space for twelve huge generators. Twenty billion candle-power is available, sufficient current to supply a city of 10,000 population.

"Other buildings are: A large one, housing film cutting and projection rooms and camera vaults; a garage, 40 by 100 feet in area; lumber sheds, saw and planing-mills; a large incinerator; scene docks; a studio greenhouse 40 by 100 feet.

"In the building of the plant 150 carloads of lumber were used; also three carloads of steel sash, 50,000 square feet of glass, six miles of underground conduit and twenty miles of lighting wire."

Of the sums spent in the making of motion pictures the following analysis of the production dollar by the writer just quoted will prove interesting.

Actors' salaries.....	\$0.25
Directors, cameramen and assistants.....	.10
Scenarios and stories.....	.10
Sets (manufactured).....	.19
Studio overhead (including cutting, assembling and titling of film)....	.20
Costumes, gowns, etc.....	.03
Locations (rent of grounds and properties and transportation).....	.08
Raw film.....	.05
	<hr/> \$1.00

As stated earlier in this chapter the production end of the motion picture business has become definitely fixed in and around Los Angeles. One of the chief reasons for this, of course, is climate. Another is the diversity of scenery to be found within comparatively short distances of the studios. A writer in the Los Angeles *Times* presented the following table to show the truth of the oft-quoted statement, "The whole world is next door to Hollywood."

Place	Place in California	Distance in Miles
African desert	Palmdale	60
Alaska	San Bernardino Mountains	90
Alaskan rivers	Russian River	450
Alps	Mount Whitney	225
Arizona towns	Saugus, Newhall	28
Atlantic Coast resorts	Newport, Balboa	45
Canadian Coast	Santa Catalina Island	45
Canadian mountains	San Bernardino Mountains	90
Eastern towns	Near Riverside, Elsinore	48-60
English hills	Las Turas Lake	37
French battlefields	Between San Fernando, Van Nuys	12
Florida Coast	Rocky Point to Resort Point	35
French Riviera	Pacific Palisades	15
Havana	Laguna	65
Holland	Naples	35
Irish hills	Las Turas Lake	37
Kentucky hills	Malibu Lake country	29
	Old Lasky Ranch	5
Kentucky mountains	Deep Creek	110
Italian lake resorts	Santa Catalina Island	45
Mexican Coast	Near Point Dumé	35
Middle Western towns	Near Sonora	600
Mississippi River	Sacramento River	460
New England (rural)	Pleasanton	350
New England Coast	Monterey	360
Red Sea	Portuguese Bend	38
Sahara Desert	Near Banning	110
Sherwood Forest	Las Turas Lake	37
Scotch hills	Las Turas Lake	37
Siberia	Truckee	500
Spanish Coast	Santa Barbara	90
Sudan desert	North of Chatsworth	28
Swamps, African jungle	Old Lasky Ranch	5
Tahiti	Santa Cruz Island	100
Texas oil fields	Huntington Beach	40
Transvaal, Africa	Near Tujunga	30
Tripoli	Catalina Island Isthmus	45
Wisconsin	Chino	45



The monopoly of picture production which the factors mentioned above, together with numerous others which it is not necessary to describe, have given to Southern California, is never likely to be lost. Detroit and the manufacture of automobiles; Chicago and the meat packing business; Akron and rubber goods; Los Angeles (Hollywood) and motion pictures. Harry Carr writing in a recent Los Angeles publication thus explained the situation: "Hollywood will always be the home station of the motion pictures. The reason why they will always be here is—because they are here. For a studio to attempt to set up business in any city other than Hollywood would be like attempting to start a livery stable in Detroit with the only feed store in San Francisco, the only horseshoer in Boston and the only customers in Tampa. No one studio could do business away from other studios. They are necessary to one another. No one studio owns enough lights to handle all the big scenes. They frequently have to borrow actors from one another. It would be impossible to maintain the very large numbers of extras for 'atmosphere' except through the mutual cooperation of many studios."

It is perhaps well in closing this chapter to point out that the motion picture business is an industry just as petroleum refining and meat packing and cloth weaving are industries. As such it has its economic aspects which are of primary importance from the standpoint of the present discussion and which add immensely directly and indirectly to the wealth of the state. But the industry has also its cultural and social aspects. Some of these are of inestimable value and some are an offense to good taste and good morals. These things, too, are matters of fundamental concern to the people of California.

Chapter VI



CHAPTER VI

Petroleum

IT IS A TRUISM to say that petroleum, as much as any other factor, is the controlling element in modern civilization and modern life. In the field of transportation it furnishes fuel for locomotives and drives great ships across the sea; it supplies power for automobiles and for the airplane wheeling in the sun; by its use man draws the four quarters of the earth closer to each other in his endless struggle to master time and space.

Though originating in Pennsylvania with the sinking of the Drake well at Titusville in 1859, the oil industry is more typical of the West than of the East. It belongs to lands of wide horizons and uncrowded populations. It is properly a frontier institution and those who pioneered it and those who still drill its wells into the bowels of the earth are characterized by much the same adventurous spirit, the same elemental traits, the same passion for uncertainty and risk which drove the fur trader through the wilderness and planted the first settlers in the frontier West. Certainly in a score of ways this industry is California's rightful heritage and belongs to the state as naturally as gold and oranges and poppies and cloudless skies.

The commercial development of petroleum in California began well within the lifetime of the present generation

and only during the past twenty-five years has the industry reached a position of preeminent importance. But long before the heroic Cabrillo sailed the California coast in his two small barks, the Indians of various localities knew of the existence of oil seepages and were making use in a few very primitive ways of the asphaltum which was left after the evaporation of the more volatile elements of this petroleum. The Spanish-Mexican settlers of the pre-American days also made use of this asphaltum, or *brea* as it was called, to furnish a roofing material for their adobe houses, and in the descriptions of California frequent reference is made to these seepages and to the *brea* which was obtained from them.

When the Portolá company, for example, on its way from San Diego to Monterey, reached the Indian village where Los Angeles now stands, the chronicler of the expedition made this interesting observation: "We judge that in the mountains that run to the west in front of us there are some volcanoes, for there are many signs on the road which stretches between the Porciuncula River and the Spring of the Alders, for the explorers saw some large marshes of a certain substance like pitch; they were boiling and bubbling, and the pitch came out mixed with an abundance of water. They noticed that the water runs to one side and the pitch to the other, and that there is such an abundance of it that it would serve to caulk many ships. This place where we stopped is called the Spring of the Alders of San Estevan." It is scarcely necessary to add that this Spring of the Alders of San Estevan and the marshes which boiled and bubbled with pitch are today the famous Brea pits, near the present Wilshire Boulevard in West Los Angeles, from which have come so many remarkable fossils.

Some of the travelers from other countries who visited California prior to the gold rush also described the oil

seepages which were to be found in various places in the province, and in 1846 Thomas O. Larkin, the United States Consul at Monterey, in describing the varied resources of California to the American Secretary of State, wrote that there were "several places throughout California where the people obtain a bituminous pitch to cover the roofs of their houses; some make a floor of it by mixing the earth with it. I have seen many rabbits, squirrels, and birds half buried in the pitch, where they soon die; even horses and black cattle are lost there."

Except as the asphaltum, however, was used in the making of floors and roofs, as already mentioned, no interest was taken in these oil seepages until after California's annexation by the United States. In 1855 or 1856 Andreas Pico is said to have distilled small quantities of petroleum from the exudes in Pico Cañon and from shallow hand-dug pits for use at the San Fernando Mission. A little later an attempt to refine the crude oil from the seepages on La Brea ranch was also made and in 1857 a little illuminating oil was produced near Carpenteria. The petroleum which was employed in these various experiments was almost as thick and heavy as asphalt and in its natural state was often used for coating wounds and caulking canoes.

Despite these first crude experiments the petroleum industry was not established on a commercial basis in California, or anywhere else for that matter, until the successful completion of the Drake well, already referred to, in 1859. Within a few years after this event the state experienced the first of its numerous oil booms. Wild-cattling was undertaken in a dozen widely separated regions. Shallow wells were sunk in the Pico Cañon district and Colonel E. D. Baker, owner of the famous Baker Block, is said to have spent \$65,000, most of it fruitlessly, on a piece of ground lying near what is now Wilshire

Boulevard and Hoover Street in Los Angeles in attempting to find oil. Exudes were also found in Humboldt County and here a few shallow wells were sunk and the town of Petrolia established as an evidence of oil and fortunes hoped for, but not even yet obtained. Sulphur Mountain in Ventura County was made to yield a little oil by means of tunnels driven into the shallow sands. This oil "was collected in crude wooden tanks by the simple expedient of digging ditches and allowing the oil to ride on the surface of the water that flowed from the tunnels. These ditches formed the first oil transportation systems in the state." Other wells were sunk along the ocean front between Santa Barbara and Ventura; Santa Rosa had its hopes aroused by petroleum seepages in a nearby swamp; and the McKittrick region as well as Santa Clara County showed sufficient evidences of oil to attract the wild-catter and the speculator.

This oil excitement in the 'sixties reflected itself, as in every subsequent boom of major importance, in a wave of extravagant speculation and the sale of thousands of dollars' worth of stock in wild-cat companies. An extract from the *Philadelphia Railroad and Mining Register* of December 3, 1864 (quoted by Redpath from the *San Francisco Bulletin* and the *Pacific Oil Reporter*), shows both the extent and the character of this boom:

"California oil land shares subscribed for in this city at \$1,000 per share, advanced \$500 per share in gold two days after the subscription list was filled. These oil lands are in the Los Angeles district, in the southern portion of California. A letter describing these lands says: 'The rancheros have always looked upon them as objectionable on account of their losing many cattle by their becoming mired in the oil that overflows hundreds of acres around the mouths of the wells.

"It may be cruel (continues the article in the *Bulletin*)



to certain struggling promoters of today to rake that out of a dead past, but some people would be better for a few groans. So let them have this brief tale of the California Petroleum Company. Its flaming prospectus announced its capital at \$10,000,000. Its property was a Spanish grant in Santa Barbara County, stated to consist of 10,000 acres. Some fellow bought it for \$22,000 in greenbacks, or about \$10,000 in gold. The deal was telegraphed to eastern associates who sold one-half for \$50,000. Then it sold for \$450,000, and then it went into the assets of the California Petroleum Company at \$10,000,000. In their wonderful prospectus the eastern boomers told of "twenty natural oil wells of the largest size" on the land. In a big advertisement in the *New York Independent*, it was stated 'that the spring marked No. 1 on the map' was estimated to contain 144,500,000 gallons of oil, 'actually in sight.' If only ten successful wells were developed the yield in twelve months would be of the value of \$5,460,000, while the company had actually twenty flowing wells."

The crest of this first boom was reached about the middle 'sixties and because of the extravagant claims made for the industry during the period of feverish activity, the general opinion prevailed that the whole petroleum business, so far at least as California was concerned, was a complete fiasco. In 1865, however, Professor Benjamin Silliman, a trained geologist, made a survey of the oil resources of California and published a report of his findings. Silliman's conclusions should have given sound basis for belief in the future of the industry; but the skeptical were not appreciably impressed. The *San Francisco Bulletin* of January 8, 1866 (quoted in *California Mineral Production* for 1925), said in part, "It is possible that the small quantity of petroleum received (40,000 or 50,000 gallons in 1865) may be the forerunner of many millions which will, at some future time, lubricate the wheels of



commerce and set a trade at work excelling in variety any that has thus far been known on this coast. At present, however, we admit to being a little skeptical about the assumption of the astute Professor Silliman that California will be found to have more oil in its soil than all the whales in the Pacific Ocean."

For approximately a decade the *Bulletin's* scepticism seemed justified. But oil producers, like miners, are hopelessly optimistic and consequently the attempt to develop commercial production in various sections of California went steadily on. New wells were drilled in Ventura County, in the Newhall district in Los Angeles County and near Los Gatos in Santa Clara County. Most of this work was done with spring poles and the wells ranged from 90 to 250 feet in depth. Steam machinery was used in 1877.

Among the leading figures in this pioneer development period were Colonel Thomas Scott of the Pennsylvania Railroad and his representative, Thomas R. Bard, so long identified with the history of Ventura County and at one time United States Senator from California. The California Star Oil Company, organized principally through the initiative of D. G. Scofield of Pennsylvania, later president of the Standard Oil Company, was the most important of the California companies at this time.

A description of oil development in Los Angeles County as Ludwig Louis Salvator, Archduke of Austria, found it in 1876, is given in the following extract from the translation of his narrative, "*Eine Blume Aus Dem Goldenen Land Oder Los Angeles*," by Marguerite Eyer Wilbur:

"The greatest mineral wealth of Los Angeles promises to be petroleum. The Pennsylvania oil fields being already on the decline, a new field promises to open up out on this coast. About half a mile from the shore, in the general vicinity of Ventura and Santa Barbara, the ocean is cov-



ered with a thin film of oil about ten miles in length and stretching far out to sea. This, which is ascribed to submarine oil-wells, is highly significant, as is the steady seepage from hidden oil-sands near the shore which discharges into the ocean. The oil region in the Ventura district stretches westward from Ventura and, paralleling the coast, reaches the ocean at Ortega Hill, then strikes off in an easterly direction to Santa Paula Creek, forming the oil-lands of the Sespe Mountains and the San Fernando range. By so doing it embraces three counties, Santa Barbara, Ventura, and Los Angeles, and extends for 100 miles. The San Fernando oil fields, however, are alone of importance in this account as falling within Los Angeles County.

"The district of San Fernando lies in the northwest corner of Los Angeles County. On the north it borders San Francisquito; on the west, the sierra of Santa Susanna; on the south, Rancho Simi, and on the east, Mission San Fernando. It also adjoins the foothills on the northeast slope of the San Gabriel Mountains where, toward the north, the Santa Clara Valley stretches.

"In a lone spur of the San Fernando Range about thirty-five miles from Los Angeles, oil was discovered in February, 1865, by Mexicans who, while out hunting bear, became thirsty and began to search for water. Finding a brook that emitted a strange odor of petroleum, they struck a match and it immediately ignited. Cognizant of the importance of their discovery, one remained on the ground to establish possession while his partner hurried off to Los Angeles to inform some of the most influential citizens—among them General Andres Pico, Dr. Vincent Geleich, Colonel Baker, and Messrs. Wiley, Leaming, Stevenson, Rice, Todd, Lyon, and Andere—of this discovery. These men decided to go out and stake claims measuring 1,500 x 600 feet apiece in conformity with the

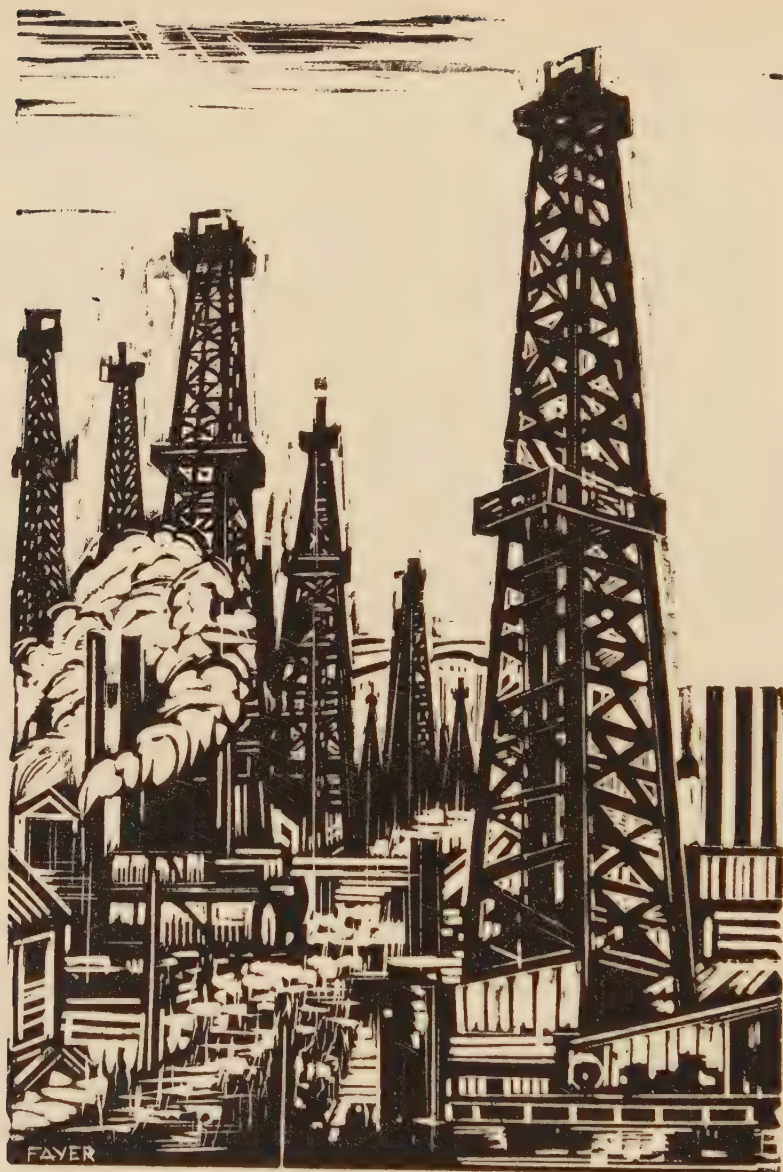
mining laws, and instruct the discoverers how to protect their claims.

"The first claim was named Cañada Pico (General Pico's holding, later owned by the Star Oil Working Company); the second was called Wiley; the third, Moore, the fourth, Rice (this is now owned by Dr. Geleich); the fifth, after a man named Leaming; the sixth, for Geleich, and the seventh, for Todd.

"Toward the close of 1865, the district was incorporated and several companies formed. In 1867, Macpherson and Scott of the Pennsylvania Company of Philadelphia vainly sought to acquire possession. Dr. Geleich had, however, realized the importance of these holdings and had drilled a well on the adjacent high ground. In 1873-1874, Dr. Geleich purchased all claims in Rice Canyon from the owners, paying considerable amounts.

"In 1874, Dr. Geleich started a refinery that will soon produce 300 barrels a day. The crude is eighty per cent pure oil. Even with a refinery capable of handling 1,500 barrels a day, the capacity would be inadequate to handle the total daily production of the wells. In the beginning the problem of transportation proved difficult; now, however, the railway is only six miles away and at Andrews Station, two hours out of Los Angeles, wooden tanks have been erected for storing oil. Furthermore, the Star Oil Working Company has established a refinery which is running at full capacity. Of crude oil sixty per cent goes into an illuminating oil of high gravity with 120-130° fire test; twenty-five per cent is extracted as a high grade lubricating oil of 18° gravity; the balance is used for fuel.

"Closely associated with these oil-wells are the numerous valuable asphalt deposits which are found throughout the county. The principal deposits and springs are in the La Brea Cañon, Los Nietos, the Santa Susanna Moun-



tains, the San Pedro Hills, San Juan Capistrano, and the plains near Cahuenga Pass, lying about seven miles in from the ocean and a similar distance from Los Angeles. The latter are very large, rich deposits that extend out over a considerable area. Major Hancock's Asphalt Works, that prepare from two to three tons daily for the market, are located nearby. Here the raw asphalt is boiled in huge kettles for twelve hours over a hot fire. The sediment having been precipitated to the bottom, the slack is then removed. The asphalt is next poured into forms made of sand where it is shaped. Of the total, one-third is slack and sediment, especially the latter, which is saved and utilized in its entirety for fuel.

"This asphalt is largely used for roofs and sidewalks. For the former purpose it is frequently used on many of the Californian houses in Los Angeles. It is also in demand for the manufacturing of glass."

Not long after this account was written, the Pacific Coast Oil Company was organized to take over the properties of the California Star Oil Company and of one or two smaller concerns. The refinery at Newhall was enlarged and a two-inch pipe, the first in California, was laid to it from wells in Pico Cañon. A short line of two-inch pipe was also laid from the Moody Gulch wells in Santa Clara County to the line of the Southern Pacific Railroad and a refinery, larger than that at Newhall, was built in Alameda. Oil from both districts was transported to this new refinery in tank cars but with the building in 1884-85 by the Mission Transfer Company of a four-inch pipe line from Pico Cañon to tidewater at Ventura, much of the oil was afterward transported by steamer instead of by rail.

The early and middle 'eighties witnessed developments of major importance in the oil business of California. The first of these was the discovery of oil in the Puente hills

which led to the opening of the earliest of the fields of major consequence in the state. Three years later oil was found in the Whittier district and the next year drilling began at Summerland on the ocean south of Santa Barbara.

At this time there were four companies of importance operating in California. The Pacific Coast Oil Company was producing in Pico Cañon and from other wells in the Newhall District. This company was later absorbed by the Standard. The Puente Oil Company, operating for many years as an independent organization but finally merging with the California Petroleum Corporation, was developing its holdings in the Puente hills. The Harbison and Stewart Oil Company—parent company of the great Union Oil Company of today—had large holdings in Ventura County; and the McPherson Oil Company was seeking to produce oil in commercial quantities in Moody Gulch in Santa Clara County. By 1888 the total production of the state had reached the rather respectable figure of 690,000 barrels a year, whereas ten years before it had been less than 16,000. About this time, however, the foremost historian of California, H. H. Bancroft, felt called upon to make the following disparaging comment upon the industry: "During the great oil speculations of Pennsylvania . . . a petroleum fever seized the community, which resulted in finding . . . some evidence of it in almost all parts of the state. Numerous experiments with the crude material have been made, proving in general too expensive for profit in a market where the eastern oils are plentiful and cheap . . . Asphaltum, formed by the evaporation of the volatile part of petroleum, . . . is used, mixed with sand, in making asphalt pavements in San Francisco. As might be expected, from the presence of the substance above named, natural gas is sometimes discovered in boring artesian wells, but it has not yet been much used for lighting or heating purposes."

Following the peak figures of 1888, production declined to less than half that amount in 1889 and it was not until five years later that the output again exceeded 600,000 barrels. In the meantime, however, certain developments of noteworthy significance had taken place in various branches of the industry. The most important of these was the opening of a number of new fields which have since added millions of barrels to the production of the state. The story of each of these successful wild-cat ventures, both from the standpoint of petroleum history and romantic interest, is worthy of extended comment, but space cannot be devoted to such detailed descriptions in this chapter. Among these fields opened in the 'nineties, however, were those of Coalinga, McKittrick, Midway-Sunset, and Kern River—all in the San Joaquin basin. The last named was first drilled in 1899, but the others were producing as early as 1890 or 1891. In the Los Angeles basin the Los Angeles-Salt Lake field was opened in 1893. It was in this field that E. L. Doheny began his long and colorful career as an oil operator. He and his partner, C. A. Canfield, working with pick and shovel and operating a small hand windlass, sank a shaft on a piece of property on West Second Street in Los Angeles and thus obtained a small quantity of oil.

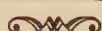
In addition to the discovery of these new fields the decade witnessed three other events of major importance to the industry. The first of these was the formation in 1890 of the Union Oil Company, a company which now for nearly forty years has been inseparably identified with the development of petroleum in California. The leading figures in the formation of this company were two brothers, Lyman and Milton Stewart, who had gained their experience in the oil fields of Pennsylvania and W. L. Harbison, who had for some years been operating in partnership with Lyman Stewart. Ten years after the forma-



tion of the Union Oil Company, the Standard Oil Company of New Jersey by the purchase of the stock of the Pacific Coast Oil Company became actively engaged in petroleum development in California. The third event of great significance to the petroleum industry in California, where the lack of fuel was a serious handicap to industry and transportation, was the successful use of oil in place of coal for the firing of locomotives. The conception and realization of this idea, as nearly as can be determined, was due to the joint efforts of E. L. Doheny and the officials of the Santa Fé Railway.

This new use of oil was little short of revolutionary. It profoundly affected railway transportation not only in California but throughout the entire Southwest by furnishing in unlimited quantities a fuel much more efficient and economical than coal and also wholly free from the smoke, cinders and dirt so generously supplied by the soft coal then burned by western locomotives. The discovery also showed the possibilities of oil as a fuel in other branches of industry and thus met an essential need, which up to that time had seemed insurmountable, for the development of a true industrial life in California. Lastly by creating a vastly greater and more varied demand for oil in these various fields it laid the foundation, prior even to the coming of the automobile, for the enormous development of the petroleum industry which has characterized these recent years.

Due to the influences just enumerated California's annual production of oil at the beginning of the century had risen to over 4,000,000 barrels. Eight producing fields had been opened in Los Angeles, Fresno, Ventura, Orange, and Santa Barbara counties. Pipe lines had been laid to four of these fields and refineries were in operation in as many different districts. Despite such evident marks of progress, however, the industry was still in the stage of



adolescence; it had not as yet "hardened into the bone of manhood." The next twenty-five years were to bring to it a full and astonishing maturity. The extent of this development, before any attempt to explain or describe it is undertaken, can briefly be indicated by two simple comparisons: in 1900, as already stated, the total production of petroleum in California was something over 4,000,000 barrels; in 1925, it was in round numbers 232,000,000 barrels, or fifty-eight times that of a quarter of a century before. The value of petroleum in 1900 was placed at \$4,000,000; in 1925, it was \$331,000,000, or an increase of approximately 8,200 per cent in twenty-five years.

Behind this enormous increase lay many factors, a few of which only may be touched upon in passing. It should be remembered, however, that the petroleum industry in California is not in any sense an entity in itself but is merely one part of a highly complex, intricately organized, world-wide industry, changes in any part of which are almost immediately reflected in the petroleum business everywhere. Consequently the explanation of the expansion of oil development in California is to be looked for in large part in the progress of the industry as a whole as well as in certain local factors which to some degree at any rate were peculiar to the California situation.

Such factors, for example, as the advancement of the science of oil geology and the increased reliance upon this new knowledge rather than upon the old haphazard wild-cat methods of oil discovery are of course not confined to the California fields. The same is also true of the revolutionary changes that have taken place both in drilling methods and drilling equipment in the last twenty-five years. In 1900, to drill a well 2,500 feet in depth was considered a difficult and costly undertaking; holes three times that depth are now put down without exciting even passing comment. But these deep wells are drilled

in Texas, Oklahoma and in every other field in the United States, or in the world for that matter, where they give promise of success, as well as in California.

So the great improvements that have been made in refining, such as the cracking process, the vast widening of the market for gasoline, fuel oil and lubricants, the development of huge corporations with millions of dollars and highly trained organizations at their command to produce, store, transport, refine and market oil are not confined to one particular state but are found throughout the world. Consequently though these factors have revolutionized the oil industry in California as they have in all other portions of the world, they are not in any sense the peculiar possessions of the state and need not be described more fully in this volume.

There are, however, certain conditions which in a peculiar way have affected petroleum development in California and these deserve especial mention. First among these, naturally, is the fact that California possesses oil deposits, both proven and unproven, of an extent and richness that make the state one of the most important producing regions in the world. A second factor is the tremendous market for California petroleum products which the state itself supplies. The chief elements in this domestic demand are the large consumption of fuel oil by railways and factories, the use of oil for asphalt pavings, the increasing and varied need for lubricants, and especially the constantly expanding requirement for gasoline in motor vehicles and airplanes. Next to New York, California has the largest number of automobiles of any state in the Union and her annual consumption of gasoline reaches the enormous total of over 1,100,000,000 gallons. A third factor that has contributed greatly to the growth of the petroleum industry in California and to its prosperity as in no other state has been the opening of the



Panama Canal. This gateway between the two oceans has made it possible to ship much of the surplus oil from the California fields to the refineries and markets on the Atlantic seaboard cheaper than oil from the mid-continent fields can be delivered at those ports.

To trace in detail the development of the oil industry from 1900 to 1925 is manifestly impossible in the few pages that are allotted to the remainder of this chapter and an attempt will be made only to touch upon the major features. The first fifteen years of the century witnessed a rapid increase in production which carried the total output of the state from 4,000,000 barrels in 1900 to over 77,000,000 barrels in 1910 and to a maximum of 104,000,000 in 1914. Most of this increase, however, came from the development of areas opened prior to 1900 rather than from the bringing in of new fields. Four of the latter, however, were discovered during this period. These included the Santa Maria-Lompoc field in 1902, the Lost Hills-Belridge field in 1910, the Coyote Hills field in 1912 and the Whittier field in the same year.

During the five years after 1914, production fluctuated between a minimum of 89,000,000 barrels in 1915 to a maximum of 101,000,000 barrels in 1918. During this period three additional fields were opened. These included the Montebello field in 1917, the Elk Hills field in 1919 and the Richfield district in the same year. Up to this time the most productive areas in the state had been the fields located in the San Joaquin Valley such as Coalinga, Midway and Kern River. Most of these fields yielded a heavy oil especially suitable for fuel purposes but comparatively low in gasoline content.

The year 1920, however, marked the beginning of a new epoch in California oil history. This was due to numerous causes, chief of which was the discovery in that year of the first of a series of phenomenal fields of high-gravity oil

in the so-called Los Angeles basin. Within the next few years the oil from these fields was to double the total production of the state, usher in a period of almost frenzied speculation which culminated in the miserable debacle of the Julian Petroleum Corporation, force an almost unprecedented expansion in pipe line, storage and refinery capacity, bring about a drastic reduction in the price of petroleum, create millions of dollars of additional wealth for the state, throw the whole oil industry of the United States temporarily out of gear because of the surplus supply, give decided impetus to the movement already on foot for the consolidation of major as well as minor California companies, and in general, effect changes little short of revolutionary in the entire petroleum business.

The first of these remarkable fields was that of Huntington Beach. Discovered late in 1920 by the Standard Oil Company this field did not reach its peak until 1923. Its greatest production was then 113,000 barrels a day and by the close of 1926 it had produced a total of over 100,000,000 barrels. The next year the Union Oil Company brought in the first producer on the Bell lease at Santa Fé Springs and at Long Beach the Shell Oil Company tapped the phenomenal sands of Signal Hill. Both of these discoveries, as well as that at Huntington Beach, brought about a period of frenzied "town lot" drilling which made common sense conservation impossible and flooded the market with oil. Santa Fé Springs and Signal Hill reached the peak of production in 1923 when the former yielded 332,000 barrels a day, and the latter 244,000 barrels. Up to the close of 1926, Santa Fé Springs had produced a total of nearly 154,000,000 barrels and Signal Hill 226,000,000 barrels.

In addition to these three major fields a number of smaller fields were developed in rapid succession. The most important of these were the Torrance field, discov-

ered in 1922, the Dominguez field in 1923, the Inglewood and Rosecrans fields in 1924, and the Ventura Avenue field which became an important producer in 1926.

As a result of the opening of these new fields California production, even though many wells in the older areas were shut in, jumped from about 105,000,000 barrels in 1920 to 264,000,000 in 1923 and for the next three years averaged something over 225,000,000 annually. Or to put the matter in another way, during the seven years from 1920 to 1926, inclusive, California produced more oil than in all her previous history. The production of these seven years was approximately 1,300,000,000 barrels.

The total yield of the state since the first well was drilled is estimated at 2,550,000,000 barrels, or a little less than one third of the sum total of all the oil produced in the United States. Under normal conditions California stands either first or second in annual yield among the other oil-producing states. It is estimated moreover that the recoverable oil reserves of the United States amount to about 5,300,000,000 barrels of which forty per cent is in the oil lands of California.

As this chapter is being written (1928) California oil production appears in no danger of any immediate decline. Deep sands have been discovered both at Signal Hill and Santa Fé Springs which have given new life to these two fields. There is the promise, moreover, of even deeper productive sands below those already tapped, and of the existence of similar sands in other fields. New fields of great potential promise have also been opened only within recent months at Elwood along the coast above Santa Barbara and in the Kettleman Hills near Coalinga. Another field of uncertain proportions has also just been found near Lawndale in the Los Angeles basin.

It is evident, therefore, that for some time to come the

actual production of California petroleum will be determined to a great degree by market conditions rather than by the available supply. As for the more distant future, many factors must be taken into consideration. A special committee of the American Petroleum Institute estimated that California in 1925 contained 11,380 producing wells, 62,000 acres of producing oil territory, 63,000 acres of proven undeveloped territory and a total of nearly 31,000,000 acres of possible oil-bearing lands. The future production of oil from these hitherto unexploited areas will also, of course, be supplemented by improvements in methods of drilling and in the technique of oil recovery. More efficient processes of refining will likewise be developed. It has also been estimated that there are nearly 14,000,000,000 tons of oil shale with a potential oil yield of over 5,000,000,000 barrels in California.

The increase in petroleum production noted in the foregoing paragraphs necessitated, naturally, a corresponding increase in refineries, pipe lines and storage reservoirs. The subject of petroleum refining has been touched upon in chapter five, but a few additional items may be given here. In 1925, which may be considered a typical year, there were eighty refineries in California, fifty-seven of which were in operation. These produced over 40,000,000 barrels of gasoline, 1,500,000 barrels of engine distillate, 6,000,000 barrels of kerosene, 130,000,000 barrels of gas and fuel oils and residuum, 2,500,000 barrels of lubricants, and 1,600,000 barrels of asphalt. The total run was a little more than 186,000,000 barrels of crude oil and 4,000,000 barrels of natural gas gasoline. Most of the larger refineries in the state are located at or near such ports as Richmond, Huntington Beach, Long Beach, Los Angeles, and El Segundo.

The history of the construction of pipe lines in Cali-



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fornia and of storage facilities need not be given in detail. The first line of major importance was laid by the Standard Oil Company from the Kern River field in the upper end of the San Joaquin Valley to Port Richmond on San Francisco Bay. This venture was at first somewhat skeptically regarded and the farmers along the right-of-way even went so far as to say the line would ultimately be used to transport their milk to San Francisco rather than to carry the heavy, viscous oil for which it was being built. The successful operation of this line, however, in spite of numerous difficulties, was effected by 1905 and thereafter other major lines were laid as necessity demanded. At the present time, exclusive of oil lines in tank farms and refineries, there are approximately five thousand miles in the state, fifteen hundred of which are gathering lines and the remainder trunk lines. The terminal delivery capacity of these lines is about 1,500,000 barrels a day or more than twice the present daily production.

During the flush production period after 1920, particularly, it was necessary to store large amounts of crude petroleum until the market was able to absorb the surplus. Storage facilities in California are of three types—steel tanks, and earth and concrete reservoirs. Most of these so-called “tank farms” are located close to such interior oil centers as Bakersfield and Coalinga or near the large refineries at Richmond, El Segundo, Los Angeles, etc., already mentioned. In 1928 it was estimated that there were 145,000,000 barrels of oil in storage in California and that the total storage capacity of the state was 375,000,000 barrels of crude and refined oil.

The production of natural gas in California, especially in recent years, has become a major item in the petroleum industry. As late as 1921, however, the output was only

about 67,000,000 cubic feet a year and the value less than \$5,000,000. Since 1923, however, production has run close to or in excess of 200,000,000 cubic feet annually and the value of the output has risen to nearly \$16,000,000. Three important uses are now found for this product. It is distributed extensively as a fuel both for domestic and industrial purposes by many of the gas companies in California cities; it is used for the production of casing-head gasoline by absorption plants and refineries; and lastly in certain fields it is being re-introduced into the oil sands from which gas pressure has been lost to give them renewed life and greater production.

This is not the place to write the history either of the individuals or of the companies which have been instrumental in the development of the petroleum industry in California. The Union and the Standard are the oldest of the larger companies which have maintained their separate existence, for the progress of the industry has been characterized by an almost continual process of consolidation and absorption and as a consequence many companies which once played an important rôle in California oil fields have subsequently lost their identity by merger with other companies. This practice has been particularly marked, in keeping with the general tendency throughout the country, during the last few years. As a consequence, while there will always be large numbers of independent operators and smaller companies, the control of the industry is passing more and more into the hands of a limited number of very large, well-entrenched corporations. Of recent years, also, a number of the strongest of the local companies have been acquired by one or another of the great eastern or middle western oil concerns which have thus found a much desired entrance into the California field. The merger of the California

Petroleum Corporation with the Texas Company and of the Associated Oil Company and its subsidiaries with the Tidewater of New Jersey are concrete examples of this practice.

On the basis of their activities within the state, six companies now hold the dominant rank in California. These are the Standard, the Shell, the Union, the Richfield, the Tidewater-Associated, the General, and the Texas.

Chapter VII



CHAPTER VII

Water and Power

WATER IS KING in California. It is the determining factor in the value of land, in the character and extent of agricultural production, in the size and prosperity of cities, in the development of industry, in the transformation of the wilderness into orchards and gardens, in the increase of wealth, the growth of population, the making and progress of the state. To increase the available water supply has long been and still remains the fundamental economic problem of all but a few sections of California.

To understand the nature of this problem, a brief review of the climatic conditions which characterize California will be helpful. The outstanding feature in this respect is the fact that for five or six consecutive months—from the first of May until at least the middle of October—there is only a negligible amount of rainfall throughout the greater part of the state. A second feature of primary importance is the fact that the total annual rainfall in by far the larger part of the non-mountainous areas of California is not sufficient, year in and year out, to meet the needs of the state without extensive and carefully devised methods of conservation. This aspect of the problem is naturally much more complicated by the

marked variation in the amount of rainfall from year to year, and because a series of extremely wet years is not uncommonly followed by several consecutive seasons of drought. The third element of essential importance in the water problem of California is the fact that the mountainous regions of the state constitute an immense storage reservoir upon which the cities and valleys below must depend for their supply of water. For these reasons it follows that in nearly every non-mountainous section of California, except in the extreme north, the growth of population and the expansion of agriculture tend to increase faster than the supply of available water.

To provide water, whether for domestic use or for irrigation, the first method adopted by the American settlers in California was simply to use the flow of nearby mountain streams or springs. Pumping plants were later installed to draw upon the underground water supplies. In more recent years the problem has been attacked on a much larger scale and with much greater resources both of engineering skill and capital. The principal items in this present-day program involve, first, the construction of storage reservoirs in the mountains, not only to conserve the water for irrigation and domestic use, but also for the generation of hydro-electric power and to prevent the immense damage done by certain streams in times of flood. In some sections, as will be shown later, the water from dams erected primarily for flood control purposes is gradually released and spread over adjacent gravel beds into which it sinks to feed the water basins lying below. From these natural storage reservoirs it is afterwards pumped for domestic or agricultural use.

A second method of meeting the California water problem is the diversion of water from sparsely inhabited drainage basins to more fertile or more populous regions many miles distant. The most striking examples of this



are the Hetch-Hetchy project of San Francisco and the diversion of water from the Owens Valley by the city of Los Angeles.

A third plan, closely akin to the one just mentioned but differing from the Los Angeles and San Francisco undertakings both in point of magnitude—at least in its ultimate conception—and in the fact that California has only partial jurisdiction over the stream involved, calls for the extensive use of the waters of the Colorado River. This program has two phases. The first, which was put into effect a quarter of a century ago, transformed the Imperial Valley from a desert into one of the richest agricultural sections in the world; the second is the famous Boulder Dam project, which whether considered from an engineering or an economic standpoint, is by far the greatest irrigation enterprise ever undertaken in the United States.

With the foregoing summary as a background it is next advisable to trace in some detail the history of those various stages through which water development and control have passed in California. Even in the feverish days of the gold rush it was evident to some of the more discerning newcomers to the state that the use of water in mining operations would soon give place to its more permanent use for irrigation. "The time will yet come," said one of these far-seeing prophets, "when the ditches which traverse the whole mineral regions of California will be more valuable for agriculture than they have ever been for the finding of gold."

In the early years of agricultural development, irrigation was almost always a matter of private initiative undertaken chiefly by the owners of large ranches. Later on cooperative companies were organized to supply water to some particular enterprise. Later still the subdividers of large tracts undertook to furnish water with the land they

sold in order to give to the latter much greater productivity as well as to make it more readily salable.

One of the first of the cooperative irrigation projects successfully carried out in California was connected with the settlement of Anaheim. Of this enterprise Wickson writes: "The first irrigated colony of California was organized in 1857 on the true cooperative plan. Fifty members constituted the 'Los Angeles Vineyard Society' which was organized in San Francisco and purchased 1,265 acres of land about thirty miles southeast of Los Angeles near the Santa Ana River. The colony was named 'Anaheim.' The land cost two dollars an acre and the water only the expense of diverting it from the river. The land was laid out in fifty twenty-acre farms, with roads on all sides, around a town site of building lots, and in 1859, the improved property was distributed to the fifty shareholders, each of whom obtained a twenty-acre farm partly planted with vines, a half-acre building lot in the town, a share in a twelve-mile main ditch and laterals, and the like, for a total outlay of \$1,400. This was not only the first fruit-growing colony of California, but it freely gave more for the money than has ever been secured from colony promoters since that time."

Limits of space prevent a further description of the interesting enterprises of these early years. Among them, however, may be mentioned that of Cache Creek, begun in 1856 and finally emerging in 1903 as the Yolo County Consolidated Water Company; the Pomona Land and Water Company, organized in 1882, the San Joaquin and Kings River Canal and Irrigation Company, incorporated in 1871, the San Diego Land and Town Company, incorporated in 1881, and the Crocker-Huffman Land and Water Company which today furnishes water for some 222,000 acres in the vicinity of Merced and Livingstone.

During this period the question of water rights became

the most burning issue in the state. Over a matter so vital to individual welfare and municipal development, so easily affected by adverse claims, and so inadequately covered in the regular legal codes it was inevitable that controversies innumerable, desperately contested and sometimes involving issues of enormous consequence, should arise. Years elapsed after the formation of the state before the legislature and the courts had built up an adequate body of definite law to cover the subject. Years more were to elapse before the rights of rival claimants could be finally determined and the property holders of many districts made secure in the possession of the water which alone gave value to the land. Under these conditions it was not surprising that disputes over water rights developed such passion and bitterness that bloodshed and violence not infrequently resulted. But the history of these conflicts cannot be given here. Disputed land titles, mining claims and water rights have not always looked to the courts in California for settlement; and of the three, the last has probably to its credit the longest list of tragedies. Innumerable purchasers of California land also suffered, especially in the early days, because of their ignorance of the absolute necessity for water to make their land productive and their failure to secure adequate safeguards for water rights. Newcomers to the state were, therefore, commonly advised by their friends to be more careful to buy water than to buy land.

Prior to 1887 all irrigation projects were of a private character. In that year, however, the state legislature passed the Wright Law which permitted the organization and bonding of irrigation districts by vote of those living within the district. This act, which later became of great importance to the state, served also as the basis for practically all similar legislation in the United States. Its purpose was twofold: first, to provide some relief to the

land holders from the arbitrary exactions of the companies which controlled the canal systems by which the water was distributed and which were not yet under state regulation; and second, to provide capital for the construction of dams, reservoirs, canals, and other works of such magnitude that their initial cost could not be undertaken by individuals.

The benefits from the Wright Law, however, were not immediately felt. The districts, which were incorporations of a public character, should have been controlled by state authorities from the beginning, but unfortunately the office of state engineer was temporarily abolished about this time and consequently these districts were not under trained or adequate supervision. As a result, quarrels between small land owners who favored the Wright Law and large land owners who opposed it, inefficient management, poor legal and engineering advice, and a general misunderstanding of the state's complicated irrigation laws brought to grief all but four of the original fifty districts which were organized under the act. One of the most glaring of these failures was the Central Irrigation District located in Glenn and Tehama counties which was organized in 1887 but did not provide any water for its members until 1905.

As a result of the unsatisfactory development of the irrigation district plan provided for in the law of 1887, additional legislation bearing on the subject was enacted from time to time within the course of the next thirty years. The most important of these measures was the Irrigation District Bond Commission Law passed in 1911; an amendment in 1913 to the Wright Law requiring the approval of the state engineer on all irrigation district organization; and an act passed in 1917 calling for state supervision of all dams built by the above districts. Partly as a result of these various measures, the formation of irri-



gation districts rapidly increased after 1910. Up to that time nine districts, including a total of about 624,000 acres and involving bond issues of approximately \$23,000,000, had been formed. At the present time, so marked has been the progress in the last eighteen years, there are 114 irrigation districts, embracing almost 4,000,000 acres, with a total bonded indebtedness of about \$140,000,000.

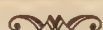
The success of these later attempts in the formation of irrigation districts, as has been suggested, was largely due to the increased activity in the matter on the part of the state government. This was shown in several ways. For example, the Department of Public Works contains a Division of Engineering and Irrigation, the functions of which are to investigate and report on proposed irrigation districts and their bond issues; to supervise expenditure of funds from approved bond issues and inspect the work of irrigation districts; to collect data, make surveys and form plans for the reclamation of the Sacramento and San Joaquin rivers; to pass on plans and specifications for construction of dams by other than municipalities or public utilities and inspect the construction of such dams; and finally to plan and carry out measures for the rectification of river channels and the protection of property from flood damage by the rivers of the state.

In 1921 the state also passed the Water Storage District Act. The purpose of this measure was to make possible the combination of the districts already placed under irrigation with those not yet enjoying this advantage. Voting under this act is based on a property qualification, each land owner having one vote for every \$100 of assessed land value, and the costs of the undertaking are distributed in proportion to the benefits obtained. Four years after the passage of this bill four districts had been organized in the San Joaquin Valley having a total area of

over 1,000,000 acres and a development program had been outlined to cost in all over \$50,000,000.

At the legislative session of 1923 an act was passed for the organization of water conservation districts which provided construction of storage reservoirs and kindred irrigation works that would be of mutual service to a number of irrigation districts. Under this act the Kings River Water Conservation District has been proposed, comprising an area of approximately a million acres which is now supplied to a greater or less extent with water from the Kings River. The plan calls for the construction of storage facilities at a site known as Pine Flats for 600,000 acre-feet of water.

The most important step of the present period, however, is the recognition that a comprehensive program for the development of the water resources of the entire state is now necessary. The Legislature of 1921 appropriated \$200,000 to enable the Division of Engineering and Irrigation of the Department of Public Works to prepare a complete inventory of all the waters within the state's boundaries and an estimate of the future needs of water for ultimate development that would secure the greatest public service from the state's water supply. With this fund, augmented by contributions from non-government sources and by additional appropriations from the state, a coordinated plan was devised for the development of the waters in the major geographic divisions of the state. The plan provides for the storage of flood waters for conservation purposes, the transportation of surplus water from the Sacramento Valley to the San Joaquin Valley, the maintenance of an adequate summer flow in the Sacramento River for navigation and salt water control, the resumption of hydraulic mining in the Sierra Nevada, the control of floods by dams and reservoirs, the expansion of irrigation along the lower Colorado River in southeastern



California, and the diversion of water from that river to the Pacific Slope for municipal and agricultural purposes.

The work of California municipalities in increasing their water supply cannot be gone into in full detail, but the two chief enterprises undertaken by Los Angeles and San Francisco must receive something more than passing mention. As early at least as 1905 it was evident to men of foresight and experience in California water problems that the water supply of Los Angeles, at that time, restricted almost wholly to the surface and underground flow of the Los Angeles River, would soon prove insufficient to meet the needs of the growing city. Accordingly, with a daring and wisdom worthy of lasting commemoration, a small group of progressive citizens devised a plan to bring the waters of the Owens River, which then emptied into the desert sink known as Owens Lake, into Los Angeles.

This program involved the settlement of many vexatious legal questions, the expenditure of almost \$25,000,000—a huge sum for that day—and the solution of engineering problems which at first sight appeared almost insoluble. The leading spirit in the enterprise was William Mulholland, a man to whom Los Angeles and Southern California owe a debt beyond all computation. Under Mulholland's supervision, as chief engineer, an aqueduct over 250 miles long was constructed from the lower end of the Owens Valley across the desert and the mountains to the city of Los Angeles. The work was begun in 1908 and completed in 1913. The water thus supplied, supplemented by that of the Los Angeles River basin, is sufficient for the domestic needs of a city of 2,000,000 population. Part of this water is now used to irrigate the ranches of the San Fernando Valley, whence it sinks into the underground channels to be pumped again to the surface for distribution into the city mains. The description of this

undertaking by Don J. Kinsey in the *Romance of Water and Power* is well worth quoting:

"Under the leadership of Mulholland, an army of 5,000 men labored through blazing desert summers and freezing mountain winters for five long years to complete the most gigantic and difficult engineering project theretofore ever undertaken by an American city.

"Before the aqueduct itself could be constructed, it had been necessary for the builders to conquer and tame a vast and well-nigh inaccessible wilderness. A railroad 120 miles long must be constructed to carry thousands of tons of heavy machinery and supplies. More than 500 miles of highways and trails must be opened to reach the line of the aqueduct with materials and men. To provide the necessity of water in the desert, a complete pipe line system was laid out to carry on construction work and supply workers. There were no established lines of communication and, therefore, hundreds of miles of telegraph and telephone wires were strung to connect the fifty-seven division camps erected to house men and supplies.

"Construction of the aqueduct itself presented hundreds of engineering difficulties, apparently insurmountable, but ultimately and invariably solved. From its intake in Owens Valley, the aqueduct pushed its way southward through the rough foothills of the High Sierras, tunneled through mountain barriers, crossed scores of wide and precipitous cañons and burrowed under the blistering sands of the Mojave Desert.

"When completed, the aqueduct included 142 separate tunnels aggregating fifty-three miles in length, twelve miles of inverted steel siphons varying in diameter from seven to eleven feet, twenty-four miles of open unlined conduit, thirty-nine miles of open cement-lined conduit, and ninety-seven miles of covered conduit. Additional miles were taken up by three large reservoirs, the largest



of these, the Haiwee Reservoir, being capable of storing more than twenty billion gallons of water."

It is of course a truism to say that the Owens River Aqueduct has made possible the development of the city of Los Angeles, but the abnormal growth of population during the last decade and the industrial development which has taken place, again necessitate a vast addition to the city's water resources. This new supply will be secured from the Colorado River through the construction of the Boulder Dam.

San Francisco, though better off than Los Angeles in this respect, has also found the local water supply insufficient to care for a material increase in her population. In 1914, therefore, the city having obtained the right to the waters of the Hetch-Hetchy Valley, a basin lying in the heart of the Sierra Nevada, not far from the Valley of the Yosemite, took the preliminary steps in the task of building an aqueduct to this site. Up to 1925 about \$44,000,000 had been spent on this enterprise, but difficulties of many kinds have arisen to delay the project and the date of its completion is not yet in sight. The aqueduct will be nearly 156 miles long and the cost will run not far from \$100,000,000.

In addition to these major municipal enterprises, much might be written if there were sufficient space, of the steps taken by such cities as San Diego and Oakland to provide a sufficient water supply for their constantly increasing populations. Much also might be said of the efforts made to accomplish two great purposes—water conservation and flood control—in certain important districts, especially in Southern California. Two only of these, however, can be mentioned. The first was the diversion of the flood waters of the Santa Ana River on to several thousand acres of sandy waste land where much of it sank into the underlying gravel beds and was conserved in this great nat-



ural reservoir. In 1922 about 80,000 acre-feet of water was stored underground in this way with the result that during the next three years, when the general water level elsewhere in Southern California continued to fall, the water plane affected by the plan mentioned above rose over six feet.

The second joint flood control-water conservation project, to which some reference should be made in this chapter, is that now being undertaken by the County of Los Angeles in the San Gabriel Cañon. For years the San Gabriel River has been the source of life to the agricultural districts and to the cities in the valley which bears its name. In times of flood, however, its turbulent waters have done untold damage to the lowlands through which it flows and have also carried enormous quantities of silt into the Los Angeles Harbor. To store the waters of this stream and to do away with the annual menace of flood, a reinforced concrete dam 2,300 feet long and 432 feet high is now in process of construction some ten miles above the mouth of the cañon. The reservoir thus formed will impound over 240,000 acre-feet of water, and the enterprise when completed will be of inestimable benefit to one of the richest sections of Southern California. Its estimated cost is about \$25,000,000.

An irrigation enterprise of an entirely different character was that which transformed the Imperial Valley from a desert into a land of fertility and wealth. The story of the reclamation of the Imperial Valley has in it, from certain standpoints at least, more of romance and of economic significance than that of any similar undertaking in the history of the West. The region affected, which was destined to become an agricultural producer unique in the development of California, prior to the introduction of water was recognized as one of the dreariest and most inhospitable deserts of the continent.



To conceive of changing this desert into orchards and cultivated fields required a bold and unfettered imagination; to make this vision a reality required tenacity of purpose, unusual engineering ability, the command of a large amount of capital, and courage such as does not often fall to the common lot. The names first associated with the idea of diverting the water of the Colorado into this region were those of Dr. Oliver M. Wozencraft and Professor William P. Blake. Wozencraft was a San Francisco physician who came to the valley in 1849 and who gave nearly forty years of his life seeking to make his dream a reality. Blake accompanied the Williamson expedition to California when it made its survey of the routes for the Pacific Railroad in 1853-54.

After these first pioneers had passed from the scene, came Charles Robinson Lockwood, Anthony H. Heber, and George Chaffey. These men, under the name of the California Development Company, despite obstacles of every conceivable character, at last succeeded in 1901 in bringing water into the Imperial Valley to work its transforming miracle. The main canal of the California Development Company leaves the Colorado River near Yuma, passes through a portion of the Mexican territory of Lower California where it serves approximately 200,000 acres and reenters the state by two branches on either side of Calexico. This canal makes possible the production of crops valued at from \$40,000,000 to \$50,000,000 annually in Imperial Valley and enables 60,000 people to live in this former solitude and land of sand and desolation.

As has been said the problems faced by those who wrought this miracle in Imperial Valley were at times almost insurmountable. The most critical of these, however, came after their dreams seemed realized. This was the great overflow which occurred in 1906 when for a

time the Colorado found again its ancient channel to the Salton Sea and threatened to submerge the whole Imperial Valley. The following account conveys some slight idea of the magnitude of this catastrophe: "The whole river was running into the Valley, leaving the channel to the Gulf dry. Once in the Valley, the river spread to a width of eight to ten miles. Then it divided into separate streams that ran into the Salton Sea. Thousands of acres of crops were drowned and thousands of acres more were so badly eroded that the land can never again be cultivated. The works of the New Liverpool Salt Company were under sixty feet of water.

"At the height of the flood, 75,000 cubic feet of water poured through the gap every second, or 6,000,000,000 cubic feet every twenty-four hours. Salton Sea rose at the rate of seven inches per day and soon covered an area of four hundred square miles. The main line of the Southern Pacific Railroad had to be moved to higher ground five times that season.

"The 'cutting back' was the most dangerous feature of the flood. The lower stratum of soil was badly cracked. All the soil was soft silt, and when the water washed against the lower stratum in its cracked condition, it washed out like powdered sugar, causing the upper strata to collapse. This 'cutting back' action worked up-stream at the rate of 1,500 to 4,000 feet per day, leaving behind it a deep, ever-widening gorge. The channel remains to-day a silent evidence of the great floods. It varies in depth from fifty to eighty feet, has an average width of 1,000 feet, and is more than forty miles long. The amount of soil thus gouged out was nearly four times as much as the total digging for the Panama Canal."

Thanks largely to the Southern Pacific Railroad, and especially to two of its officials, Epes Randolph and H. T. Cory, the torrent was at last successfully curbed, and to-



day Imperial Valley is the largest and most prosperous unit of reclaimed land under irrigation in the United States.

As a result of the various irrigation projects—private, municipal, state and Federal—which have been successfully put into operation during the past twenty-five years, the area of California land under irrigation rose from a little over 2,600,000 acres in 1900, to 4,200,000 acres in 1920 and to 4,700,000 acres in 1924. In similar fashion the amount of capital invested in irrigation enterprises increased from about \$19,000,000 in 1900, to \$195,000,000 in 1920. The total area of land under irrigation enterprises, as distinguished from that actually irrigated, in 1925 was about 5,900,000 acres.

Remarkable as this development has been, however, and transforming as have been its effects upon California's agricultural progress, there still remains much to be accomplished in this field. The extent of irrigable land in California approximates 15,000,000 acres. To furnish the portion of this vast area not now under cultivation with water, to provide a constant flow by huge storage reservoirs, to coordinate the various river systems of the state so that the harmful effects of the fluctuations of annual rainfall may be minimized, to supply cities and industries with adequate water for their development and to prevent the devastation resulting from floods by means of dams, reservoirs, and reforestation is the vast problem which still challenges the courage and far-sightedness and engineering skill of California.

Closely associated with the reclamation of land by irrigation is the reclamation of swamp and overflow land by drainage. As a matter of fact about one fourth as much land in California is susceptible of development by the latter means as by the former. Most of this drainage land lies along the lower reaches of the Sacramento and San

Joaquin rivers and for many years the reclamation of this land from flood, tidal overflow and seepage has been in progress.

The first drainage law, creating a state board of swamp-land commissioners, was passed in 1861. Other measures touching the same subject were subsequently enacted by the State Legislature. Chief of these was the law of 1872 authorizing the creation of reclamation districts and the law of 1903 providing for the formation of drainage districts for the improvement of agricultural areas not classified as swamp or overflow lands. A special act also authorized the formation of the Sacramento-San Joaquin Drainage District in 1911-1913. The territory included under this act lies along the Sacramento, Feather and San Joaquin rivers from Butte and Glenn counties on the north to Fresno and Madera counties on the south. In 1920 about 1,100,000 acres were included in one or another of the various reclamation districts mentioned above, and approximately \$50,000,000 had been spent on such improvements.

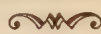
No description of the conservation and use of water in California would be complete without some account of the development of hydro-electric power. This business, indeed, whether from the standpoint of sheer romantic interest, capital invested, or contribution to the economic and social progress of the state stands as one of the foremost industries of California.

Since the earliest days of hydro-electric development California has held a commanding place in this field among the states of the Union. As early as 1882 a small power plant near Etiwanda was put into operation by the same George Chaffey, who later participated in the making of Imperial Valley, and on December 31, 1892, the San Antonio Light and Power Company began the transmission of electricity from its power station in San An-

tonio Cañon some fourteen miles north of Pomona. Less than a year later the Redlands Electric and Power Company began the operation of a plant on Mill Creek in the San Bernardino Mountains. Prior to the erection of these plants only two others of their kind—one in Oregon and one in Colorado—were producing hydro-electric power for commercial purposes.

From this early beginning the hydro-electric industry of California has grown to such large proportions that the state today ranks first in the United States in the production of this form of energy. This development has been the natural—indeed, almost the inevitable—result of certain definite factors. The mountains of California—towering higher than the mountains of any other state, precipitous, snow-wrapped during so many months of the year—furnish the essential background. The development of great irrigation projects and of similar enterprises to furnish water for the need of cities has logically led to the generation of hydro-electric energy as a necessary and most profitable by-product. Finally, the combination of a rapidly expanding population, both urban and agricultural, with its demand for electricity for transportation, light and power, the headlong growth of industry, and the lack of coal for fuel has created a constantly increasing market for electric energy.

This market, though not peculiar in any way to California, is to some degree here more varied than in other states. Electricity is thus used not only for transportation purposes by street and interurban railways, for domestic and street lighting, and for power in manufacturing plants, but also very extensively in California in mining operations and for pumping water for irrigation and domestic use. An illustration of the relative importance of these various uses is furnished by the report of the Southern California Edison Company for 1927. Of the 1,668,000



connected load in horse-power at the close of that year the distribution was as follows: eleven per cent for lighting and cooking; sixteen per cent for railways; fourteen per cent for agriculture; thirty-three per cent for industrial purposes, and twenty-one per cent for resale to municipalities. The report of companies operating in the northern part of the state would show a somewhat different allocation from that of the companies serving Southern California, but this difference would not be of essential importance except as the use of electricity in mining constitutes a much more important item in the north.

One of the most important services that the hydro-electric industry rendered California, particularly during the first two decades of the century, was to make possible the development not only of street railways for the larger municipalities, but also the construction of interurban systems, the most notable of which is the Pacific Electric Railway of Los Angeles. The contribution of such a system, to the social as well as to the economic well-being of the large community it serves, is impossible to estimate.

The history of the growth of the hydro-electric industry from a total capacity of 30,500 kilowatt hours in 1900, to a capacity of 1,366,000 kilowatt hours in 1925, as has been suggested above, has an element of fascination about it that cannot altogether be measured in units of electric energy or of dollars invested and dividends disbursed. Four major problems, any one of which was difficult enough to discourage all but the most stout-hearted, had to be overcome before the industry could reach its present proportions. The first of these was the erection of plants in the difficult mountainous country where water-power was available. The second was to provide, by huge storage reservoirs, and sometimes by the diversion of streams, not only a sufficient but also a constant



supply of water throughout the entire year to keep these plants in operation. The third was to transmit the power, often over great distances, from the generating plants to the cities and valleys where it could be set to work. And the fourth was to secure capital in sufficient quantities and at reasonable rates of interest to permit the financing of these costly enterprises.

To enter into a discussion of the methods employed in solving these four problems would require a detailed account of the program followed by each of the larger companies and of the activities of those outstanding individuals who were pioneers in the field. This is, of course, impossible here because of the limitations of space, but it is a story which some day should be told in full detail because of its fascination and economic significance.

One of the necessary stages in the evolution of the industry was the emergence of a few strong, well financed and ably managed corporations and the absorption of the smaller companies by these larger organizations. At the present time, exclusive of municipal electric companies, there are not more than ten light and power corporations of importance doing business in California. These include in Northern California the Pacific Gas and Electric Company, the largest of the group, the Great Western Power Company, and the California-Oregon Power Company. Southern California is served by the Southern California Edison Company, the second largest electric company in California, the San Joaquin Light and Power Company, the Southern Sierras Power Company, the Los Angeles Gas and Electric Company, and the San Diego Consolidated Gas and Electric Company.

In addition to these privately owned corporations, a number of California municipalities also generate and distribute electric power within their own corporate limits.

The most important enterprise of this character is the hydro-electric power system operated by the Bureau of Power and Light of the City of Los Angeles. This system was a natural by-product, so to speak, of the Owens River Aqueduct which, as has already been said, was constructed primarily to furnish Los Angeles with an adequate supply of water but which has since become one of the important electric power producers of the state.

A report in favor of utilizing the aqueduct water for power purposes was made as early as 1906, and a route was finally selected for the aqueduct which would most readily lend itself to the use of the water for this purpose. In April, 1910, therefore, bonds were voted to take the first step necessary for power development. The private electric companies at this time bitterly opposed the plan of the Bureau of Power and Light and for several years fought to prevent the distribution of municipal power. The city, however, eventually carried through its program and developed one of the most successful municipal electric systems in the United States. Though still opposed by certain reactionary interests in Los Angeles the Bureau of Power and Light is today accepted as one of the most essential branches of city administration and even the private companies have come to regard it as a permanent factor in the hydro-electric field. At the present time the city maintains five plants with a total capacity of 118,000 horse-power. In the system there are also 10,000 miles of overhead lines and underground cables. In 1927, 230,000 customers were served and the system showed a net profit of over \$3,250,000. Its total assets are over \$70,000,000.

Mention has been made of the fact that the development of hydro-electric power necessitated the carrying out of certain engineering projects of very great magnitude. Such an enterprise, to cite only one or two of typical significance, was the erection of a huge dam at



the lower end of Lake Almanor in Plumas County by the Great Western Power Company. By means of this dam an artificial lake was created capable of storing 1,300,000 acre-feet of water and of supplying a year-round flow for the operation of a number of important plants erected by the company on the Feather River. This project represents only one item in a \$200,000,000 program outlined by the company.

An enterprise of much greater magnitude was the so-called Big Creek project of the Southern California Edison Company. This involved among other things the building of three huge storage reservoirs in the heart of the Sierra Nevada and the diversion of the waters of the South Fork of the San Joaquin River through a ridge of solid granite eleven miles in width. The project was begun in 1911. To date it has cost \$200,000,000 and will ultimately absorb \$175,000,000 more. The reservoirs embraced in this single enterprise are capable of storing nearly 300,000 acre-feet of water and the five hydro-electric plants fed by these reservoirs have a capacity of over 566,000 horse-power.

Since most of the hydro-electric plants in California are located in the Sierra Nevada at great distances from the centers of population, the transmission of current is one of the major problems of the industry, both from the technical as well as from the financial standpoint. This is not the place to enter into a discussion of the technical and engineering features of the matter; it is sufficient to note that certain of the California companies were among the pioneers in this field and that today there are high-power transmission lines in the state 275 miles in length and capable of carrying in excess of 220,000 volts.

Another important development of the hydro-electric industry in California has been the so-called "hook-up" arrangement between all the major systems of the state (sponsored especially by the State Railway Commission

which regulates all public utilities in California) by which in times of emergency the transmission lines of one company are connected with those of neighboring companies so that a surplus of power in one part of the state may be transmitted to another section where there is an unavoidable scarcity. The value of this arrangement was particularly evident in the drought of 1924, and since that time it has been extended so that today power generated in Southern Oregon can be sent as far south as Mexico.

Hydro-electric development in California has always been supplemented by the generation of electric energy by steam. Of recent years this latter method has been growing rapidly in importance, especially in Southern California where the rainfall is generally less than in Northern California. The reasons for this increasing use of steam are to be found in the insufficiency of water power to meet the constantly growing demand for electric energy, in the necessity for some supplemental agency to keep the supply of electric energy constant, even in seasons of deficient rainfall, in the abundant supply of petroleum which affords an economic fuel for the generation of steam, in the much more efficient processes that have recently been discovered for the generation of electricity in steam plants, and in the heavy cost of transmitting electric energy over long distances.

A typical example of such an enterprise is that of the Southern California Edison Company in the harbor district of Long Beach. This plant is now capable of producing 125,000 horse-power but it is ultimately planned to expand this to 1,000,000 horse-power at a total cost of about \$100,000,000. The same corporation, though one of the most important hydro-electric companies in the state, out of a total operating plant capacity of 1,073,000

horse-power, depends upon its steam plants for approximately 485,000 horse-power.

The growth of the electrical industry since 1900 may be understood from the fact that in 1925 it represented an investment in fixed capital in service of \$760,000,000 and returned in the sale of electric energy for the same year over \$90,000,000. All electric companies in the state are directly under the control of the State Railway Commission both as respects the issuance of securities and the regulation of rates. In determining the latter the commission endeavors to protect the consumer against extortionate charges but to permit the companies a fair return on capital investment.

This procedure at the present time appears
to be mutually satisfactory both
to the power corporations and
to the general public.

Chapter VIII



CHAPTER VIII

Financing a New Civilization

TO COMPLETE the account of California's economic progress it is necessary to describe the growth of those financial institutions which in large part have made possible the development of the agricultural, industrial and mineral resources of the state and in turn have themselves received life and vigor from the wealth they helped to create. To write the financial history of California one need not go back of the days of '49. During the Spanish-Mexican régime there were no banks in the province of Alta California, no paper money of any kind, very little specie, and almost no borrowing or lending for commercial purposes. With the discovery of gold, the inrush of population and the development of a varied and complex economic life, it became necessary to establish banks, provide money and gradually develop an extensive system of credit.

In things financial, as in all other things, the first years of the gold rush were characterized by the primitive simplicity of the frontier. In the mining regions gold dust and cash, when not carried on the miner's own person, were either hidden away or entrusted to someone of known probity for safe-keeping. An account of one

such man, Gallant D. Dickinson of Mokelumne Hill, as described by A. G. Andresen, is given in Cross's *Financing an Empire*. "The vault of his bank," says Andresen, "was an excavation a yard square, under the bed occupied by himself and Mrs. Dickinson; its compartments were buckskin bags, and the time-lock was a revolver of large caliber. The buckskin bags were tied with string, and none was received unless labeled with the name of the owner. No security was given. The vigilante was the law of the camp, and an era of peace and good order, and a feeling of mutual confidence existed."

In the cities the service rendered in the mining centers by individuals was commonly undertaken by the mercantile houses with which the miners or newly arrived immigrants did business, and the safes of such houses became the deposit vaults for hundreds of thousands of dollars in gold dust and specie of their more prudent customers. Indeed so wide-spread became this custom and so useful a purpose did it serve that it continued long after the regular banks were established in many cities and districts of California. In San Francisco the firms of Melruss, Howard and Company, Cross and Company, and Macondry and Company were especially important in furnishing this primitive banking service. Brannan and Company, Hensley, Reading and Company, and Priest, Lee and Company filled a similar need in Sacramento, and somewhat later John Temple, I. W. Hellman, and Wells, Fargo and Company offered the same accommodations to their patrons in Los Angeles.

Buying and selling of gold, occasional loans, and dealing in exchange were the next logical steps in the process of developing a regular banking business in the state. "The first banking houses of California were those firms that held deposits of money and gold dust for their customers, bought and sold gold dust and gold bars, loaned

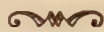


funds, dealt in exchange drawn on banks, bankers and merchants at home and abroad, or carried on any combination of these activities."

It is not now definitely known who actually established the first regular bank in California. Robert A. Parker, later known to fame as the proprietor of the Parker House, of San Francisco, in 1848, "ran a store in an adobe house on Dupont Street . . . and very probably combined a little primitive banking with his other business." Dr. Stephen A. Wright's "Miners' Bank" is also supposed to have opened toward the close of the same year. Naglee and Sinton—the one a West Point graduate who came to California with the Stevenson regiment; the other a former paymaster on the battleship *Ohio*—on January 9, 1849, opened an "Exchange and Deposit Office" in the Parker House on Kearney Street and thus also became eligible to compete for the honor of having established the first bank in California. Four other firms of similar character were organized in San Francisco before the close of that year.

It is not the province or the purpose of this chapter to trace further the history of individual banks during this early period. It is sufficient to say that between 1850 and 1853, there was a rapid expansion of banking in the principal centers of Northern California, and at the close of the latter year there were nineteen banks and nine insurance companies in the city of San Francisco alone. Of the banking firms, some of the best known of which were also express companies, the most important were Adams and Company; Palmer, Cook and Company; Drexel, Sather and Church; Lucas, Turner and Company; and Page, Bacon and Company. Adams and Company and Page, Bacon and Company enjoyed the greatest popularity among these organizations.

For the first five years of the decade the banking houses of San Francisco, with some few exceptions, did a pros-



perous business, a large item of which was the buying and selling of drafts. In 1855, however, a financial panic occurred which caused most of the San Francisco banks to suspend operations for a brief period and some of them to go permanently to the wall. Page, Bacon and Company, owing to the failure of the company's house in St. Louis and the fact that the San Francisco branch had depleted its resources by a shipment of two million dollars of gold around the Horn, was the first of the large firms to come to grief. A run on this bank started on February 17th and quickly developed into a veritable panic. "The street around the bank soon became thronged with anxious holders of their paper," said an article, quoted by Cross, in the San Francisco *Evening News* of February 18th, 1855. "Moment after moment the crowd increased. Each one seemed to act as if his salvation depended upon his reaching the counter first, and pushing, crowding and crushing was the order. Some climbed over the heads and shoulders of those before them; and some of those who reached the counter and received the much coveted coin (as all promptly did) had to be hoisted over it, and find an exit from the back door. . . . Men came running in, hatless and breathless, clutching a small certificate of a few hundred dollars."

For nearly a week Page, Bacon and Company postponed the inevitable crash, but on February 23rd—the Black Friday of San Francisco's financial history—the bank closed its doors. In the meantime every other bank in San Francisco had been placed in jeopardy and most of them were forced to suspend business. Among the houses so involved was the widely known firm of Adams and Company which not only ranked as one of the strongest banks in San Francisco, but also had branches in many other California cities. When it became known that the bank was no longer solvent, the funds in its possession



in San Francisco were hurriedly transferred to the bank of Palmer, Cook and Company before they could be attached by the depositors. This action led to serious charges of corruption and scandal and to a prolonged, bitter but profitless legal battle on the part of the depositors to regain some portion of their lost funds.

Following the debacle of 1855 a depression set in which lasted almost a decade. During this period, as one writer has said, "almost all the banks in the state were merely banks of deposit and all were entirely unregulated by any government, state, national or local body. Anyone who had a little money and who wanted to increase it could rent an office, hang out a shingle labeled 'Bank' and commence business. Consequently a large number of banking firms were started which disappeared leaving almost no trace of their existence." In spite of the loose banking regulations then prevailing, however, these years witnessed the introduction of a most significant branch of California banking. For a decade or more after the adoption of the State Constitution there was no provision in law for the organization of a banking corporation of any kind. In 1862, however, an act was passed by the legislature providing for the incorporation of Savings and Loan Societies. Four years later five savings banks had been organized within the state. These banks had total deposits of \$8,650,000 and 24,550 depositors.

In Southern California, in keeping with the general trend of economic progress, banking developed much later and on a much smaller scale than in the northern portion of the state. For fifteen years after banks had been established in San Francisco there was no similar institution in the south. Such men as Governor Downey and John Temple urged the necessity for a bank in Los Angeles during the period of the Civil War, but public opinion was indifferent if not actually hostile to the idea

and business conditions were not yet ready for it. The first Los Angeles bank was, therefore, not opened until 1865. It was started by a merchant, I. W. Hellman, who had long followed the custom, already mentioned, of providing a safe place of deposit for the money of his customers. An experience with an Irishman, whose wits were somewhat befuddled by drink, showed Hellman that he must keep a more exact account of the money deposited with him and thus led him into the banking business.

J. A. Graves, for many years president of the Farmers and Merchants National Bank of Los Angeles and author of a book of reminiscences called *My Seventy Years in California*, after describing Hellman's experience with this Irishman, continues: "This was on a Saturday. He got hold of a good friend who was running a paper, and between them they fixed up some pass books marked 'I. W. Hellman, Banker.' He had a carpenter fence off a corner of his store, in which he put the safe, and hung up the sign, 'I. W. Hellman, Banker.' The next miner who came along with gold dust was told he could not leave it there, 'but,' said Mr. Hellman, 'I will buy your gold dust at current rates, and I am running a bank. Here, see this book. After I buy your gold you can deposit the money with me, take this book and check it out as you please. All checks drawn on me, while your money lasts will be paid.'"

Hellman's pioneer venture into the banking field was soon followed by more ambitious undertakings. In 1868 Downey and Hayward opened a bank with a capitalization of \$100,000 and later in the same year Hellman united with John Temple to form a somewhat larger institution. Temple, however, soon withdrew from this partnership to join later on with William Workman in the Temple and Workman Bank which failed as a result of the panic of 1875. Hellman, in his turn, joined forces, in 1871, with



Governor Downey to form the Farmers and Merchants Bank which, now known as the Farmers and Merchants National Bank, is the oldest and still one of the largest of the Los Angeles banks. In 1874 the Los Angeles County Bank was organized and the next year the Commercial Bank of Los Angeles was opened. This latter bank in 1880 became the well known First National Bank of Los Angeles.

During the first years of statehood the currency of California was almost wholly on a metallic basis. The reasons for this were various. In the first place from the beginning of American occupation, public opinion in the state was decidedly hostile to paper money—an attitude which found definite expression in the constitutional convention of 1849 and later on did much to nullify the currency legislation of the national government during the Civil War so far as California was concerned. A vestige of the same attitude, one might add parenthetically, survived until a very recent date in the practice followed by a majority of Californians in carrying gold or silver coins upon their persons instead of bills.

The abundance of gold in the early years and the subsequent discovery of the enormous silver deposits of Nevada were also responsible to some degree for the failure of paper money to obtain a foothold within the state. The isolation of California, moreover, from the national centers of business and population made it difficult for the people of the state to familiarize themselves with the use of paper money and kept alive the prejudice against it which the early settlers had established. Especially during the first years of statehood, however, the scarcity of currency was a serious inconvenience to ordinary business. Gold slugs, worth from five to fifty dollars, were one of the expedients used to meet the situation. A “pinch” of gold dust was the accepted substitute for a dollar. The

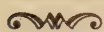


need for fractional currency was met by the importation of foreign silver coins which commonly passed for much more than their real value. No one thought of offering or asking less than "two-bits," or twenty-five cents, for an article and even as late as 1878, the nickel was regarded with cordial disgust by conservative Californians, and one of the San Francisco papers in that year protested against the use of "bushels and carloads of that nasty and repulsive coin known as the nickel five-cent piece," and asked in disdain, "Who wants to carry in his pocket nickel, the half brother to arsenic?"

Rockwell D. Hunt in his *California and Californians* has succinctly summed up this troublesome currency problem in the early days of statehood in the following paragraphs:

"In comparison with the requirements of the great volume of business transactions occasioned by the sudden influx of large numbers of people, the scarcity of money was very pronounced. The small amount of specie composed of American coins, Spanish doubloons, Mexican silver dollars, German marks, and other foreign coins presented no satisfactory or uniform standard, while in quantity it was wholly inadequate. Private firms issued gold coins of several denominations, which, while undertaken for profit, served in a limited way as a matter of public convenience.

"But for several years gold dust was the principal medium of exchange and like other commodities gold itself in the hands of miners was subject to violent fluctuations of value, ranging from as low as four or five to as high as eighteen or twenty dollars per ounce. The par of exchange was ultimately fixed at sixteen dollars per ounce. But the inconvenience in handling 'dust' rendered it more and more impossible as a permanent circulating medium. With the establishment of a branch mint in San Fran-



cisco in 1854, there ensued a marked change for the better in monetary affairs."

The establishment of the mint, as suggested above, distinctly improved but it did not solve the money problem of early California, and, as late as 1870, Hittell in his *Resources of California* wrote thus of the situation which existed at that time:

"There is no paper money in California. The constitution of the state prohibits 'banking,' and 'the creation of paper to circulate as money.' No bank-notes have ever been current in this state or on this coast; no bank-notes are used on any part of the coast between Acapulco and Sitka, and we are so far from the countries in which paper money is current, that no attempt is made to introduce it here. In our banks there are great piles of double eagles, but no bank-notes are visible. Wherever you go, or whatever you buy, you see only gold and silver; people do not think of paper. All large sums are paid in double eagles, and three-fourths, if not nine-tenths, of our coin is of that size, which is far more convenient than the smaller coins common in other countries. A large portion of our shipment of treasure abroad is in double eagles, and nine-tenths of the gold coined at the San Francisco Mint is in pieces of that size. In 1860, \$11,178,000 of gold were coined, and \$10,899,000 were in double eagles. The general character of our coin is large. No copper money is current, nor can anything be bought with a cent. The smallest coin commonly used is a dime; half-dimes are rarely seen, and when used two of them are ordinarily put together to make a dime. The general sentiment among the people is opposed to the use of any coin less than a ten-cent piece; they like high wages and high prices, and think that the introduction of half-dimes and cents would have a tendency to make us feel poor and to introduce low wages. Many retail dealers, even in the



sale of candies and fruits, will therefore not take a half-dime, and not a few persons would be ashamed to offer to purchase half a dime's worth of anything. A half-dime is looked upon with more contempt and is far more rare in California than a cent in New York. During the last three months, for instance, though I purchase little articles every day, I have not seen a half-dime. That coin is not made in our mint, nor is there any demand for it. Three-cent pieces, coppers, and nickels are never seen here except as curiosities, and are of no value to make purchases."

Owing to the scarcity of money, the lack of an adequate banking and credit system, the difficulty of providing satisfactory and readily convertible security, and the other unusual financial conditions generally existing in a frontier community, interest rates in the state during the period under discussion were abnormally high. Indeed, not until very recent years have these rates been reduced in California to a level comparable to that existing in the older and wealthier sections of the nation and in this situation California has of course found a serious economic drawback.

Prior to 1871 interest was charged upon a monthly basis. The rates varied widely of course, depending not only upon the security but also from place to place and from time to time. A normal average, however, was not far from 1½% to 2% a month on real estate, 3% to 4% on merchandise loans, and 2% to 3% on short term bank loans. Under abnormal conditions, however, these figures furnished no standard whatever for comparison. Rates ranging from 10% to 20% a month were not considered especially unusual in the earlier years and 5% or 6% a month was looked upon as very moderate in 1848 and 1849. Numerous instances were known, moreover, of these charges having been placed upon a weekly basis and



the hapless borrower paying from 5 % to 15 % every seven days to the obliging lender. By 1870, however, thanks especially to the action of the Hibernia Savings and Loan Society, rates on real estate mortgages were reduced to 10 % or 12 % a year.

With the foregoing summary of banking prior to 1875 it is possible to understand the more recent financial progress of the state. The beginning of modern banking in California is generally dated from the Banking Act of 1878 which provided for the creation of a board of three commissioners "with power to call for statements from the banks, make examinations of their affairs, regulate the conduct of their business, and to close insolvent concerns." One of the reasons for this measure was the panic of 1875 and the wide-spread demand which arose as a consequence for effective government control of the hitherto unsupervised state banks. The failure in 1875 of the Bank of California—one of the largest and most influential financial institutions of the state—because of the speculations of its president who committed suicide when the bank closed its doors, was sufficient evidence of the evil consequences of the policy of non-regulation in effect at that time.

At the time of the creation of the first commission there were twenty-eight savings banks, fifty-two commercial banks and four foreign banks which came under its jurisdiction. As a result of an inspection by the commission, five of these banks were almost immediately forced into liquidation and as a consequence for a year or two the commission encountered a certain amount of opposition both from the banking interests themselves and from an uninformed public opinion. This condition, however, was soon changed to one of general confidence in the character of the commission and of approval of its work.

The years immediately following 1878 constitute a transitional period in California banking. A temporary decrease of considerable magnitude took place in bank deposits, capital was shifted from speculation in Nevada mining stocks to California agriculture, and savings banks began to switch an increasing percentage of their funds which up to that time had gone almost wholly for real estate loans, into seasoned stocks and bonds.

By 1883 the slump in bank deposits mentioned in the preceding paragraph was over, much fresh capital was being imported into the state, especially in the south, by the large number of settlers who were coming from the East and Middle West, many new banks were being organized, and several of the more serious limitations of the Banking Act of 1878 were gradually being remedied by supplementary legislation. Finally, in 1891, a State Bankers' Association was organized and the way prepared for a much more effective and properly regulated banking system than the state had previously enjoyed.

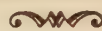
A brief statistical comparison will serve to show something of the growth of the banking industry during this decade of the 'eighties. The total number of banks in California in 1880 was 120; in 1890, it was 232. The total bank resources in the former year were approximately \$140,000,000; ten years later they had grown to \$263,000,000, or a gain of over 88%. Population in the meantime had risen from 879,000 to 1,225,000—an increase of only 39%.

The panic of 1893, both because of its effect upon the nation as a whole and also because of the serious setback it gave to all forms of economic activity in the youthful state itself, led to a material slowing down in the financial growth of California through the remainder of the decade. In Southern California, particularly, the effects of this panic were most discouraging. Compared to those of San Francisco, the banking resources of this portion

of the state were very meager. It was also still oppressed by the aftermath of the spectacular real estate boom of 1887; and worst of all it had little financial reserve to draw upon in time of serious emergency. As a consequence the mortality among the Southern California banks during the panic of 1893 was unusually high.

The crisis was ushered in by the failure of the Riverside Banking Company of Riverside on June 14th, 1893. Depositors in other cities became panicky and one week later four banks in Los Angeles, including the First National and the Southern California National, failed to open for business. San Diego passed through a similar experience with the suspension of the First National Bank and of the Consolidated National Bank and two affiliated institutions. Elsewhere in Southern California numerous other banks suspended payment but in San Francisco only two banks, the Pacific Bank and the Peoples Home Savings Bank, both of which were already in a precarious condition, closed their doors as a result of the panic.

Many of the Southern California banks, including those of any importance in Los Angeles, which were closed at the height of the panic, very soon reopened, but the effects of the depression were felt for many years in almost every branch of California's economic life. In the growth of population, banking resources, and nearly every other standard by which the state's material progress can be gauged, for at least five years after 1893, there was either actual loss, almost complete stagnation or only a very hesitant and slow appreciation. By 1898, however, the depressive influences had spent their force and nearly every industry in the state began to feel the quickening of new life. Banking naturally shared this welcome change. Within the next decade banking resources more than doubled; and what was perhaps even more



important, the people of the state gradually became better acquainted with the services banks could render to the community and were more inclined to regard them as a fundamental necessity.

During this period, however, the California banks were called upon to face two serious emergencies. The first of these was the great San Francisco earthquake and fire of April 18, 1906. The destruction of property at this time was enormous and many of the San Francisco bank buildings were themselves burned or destroyed in the disaster. Despite these losses, however, and the temporary demoralization of all business which necessarily ensued, through the support of large banking companies of other cities and the aid of the Federal and state governments, the San Francisco banks were able almost immediately to set up emergency machinery and within little more than a month to reopen normally for business.

The second crisis, which followed close on the heels of the first, was not weathered so successfully. This was the wide-spread panic of 1907 which brought a business and financial depression from which the nation as a whole was slow to recover. In California the full force of the panic was not felt until the closing months of 1907 and the early part of the next year. As a result of the panic, upwards of thirty California banks closed their doors either voluntarily or through the action of the state bank commission. The most disastrous of these failures was that of the California Safe Deposit and Trust Company of San Francisco, with liabilities of over \$9,000,000 and assets which eventually brought the creditors only \$1,700,000. Worst of all, the collapse of this large institution brought ruin or loss to many subsidiary corporations of various kinds with which the bank was affiliated.

The financial stringency of 1907, and the suspension of such a large number of banks, brought business to a stand-



still in California for a number of months and left the state handicapped for several years in its economic progress. Partly as a consequence of this panic, however, and partly as a result of the general realization that the California banking laws, which represented only detailed modifications of the Act of 1878, were inadequate to meet the more complex conditions which had arisen during the intervening generation, an entirely new system of banking legislation was put into effect. The changed conditions which had developed in the three decades intervening between the two measures are succinctly summed up in the following paragraph:

“When the bank commissioners made their first investigation on June 30, 1878, they listed 28 savings banks, 52 commercial banks, and 4 branches of foreign banks, a grand total of 84 banks, with total resources of \$151,932,-430. Those figures did not include the handful of national banks then in existence in various parts of the state. When the bank commissioners made their last report on October, 1, 1908, they listed 506 state and private banks, 356 of which were commercial banks, 134 were savings banks, and 16 were private banks. Those 506 banks had total assets of \$539,031,885. The state's banking structure had greatly expanded, not only as to the number of institutions but also as to the character of their activities. A law designed to care for eighty-four state institutions in 1878 could not, even with the greatest stretch of the imagination, be held to be applicable to a changed economic situation, in which over 500 banks were functioning.”

Without seeking in a detailed way to analyze the Act of 1909, and the amendments subsequently made to it, it is sufficient for the purpose of this chapter merely to point out its chief provisions. The most important of these provided for the abolition of the old Board of Bank Com-



missioners and the creation of an official known as the State Superintendent of Banks with very wide supervisory powers. The act also provided for a much more careful examination of banks than had been previously required; authorized so-called "departmental banking"; made certain salutary changes in the regulations governing capital stock, surplus, reserves, loans, etc.; required the approval of the state superintendent of banks for the establishment of branch banks and materially curtailed the operation of private banks. In 1913 these last were entirely prohibited.

Immediately following the enactment of this measure, there ensued a brief period of uncertainty and readjustment in which at least twelve banks were closed by the state superintendent of banks, and many others found it necessary to make radical changes in their methods of doing business to escape a similar fate. Since that time, however, very few California state banks have failed. During the last two decades the Bank Act of 1909 has frequently been modified as to particular provisions by the legislature but the fundamental principles upon which it was based have undergone but little change.

The inauguration of the Federal Reserve System in 1913, and the abnormal conditions created by the World War, affected California banks in much the same fashion as they affected the banks of other states. The aftermath of the war, however, left no train of ruined banks behind it in California as it did, for example, in many of the wheat-growing sections of the Middle West. On the contrary the decade following the war witnessed the attainment of a financial strength in California greater than was ever dreamed of before and the development of banking resources comparable to the needs of the youthful empire they were called upon to serve.

The period from 1920 to the present has thus been

marked by certain significant characteristics which have made it to some degree almost a revolutionary epoch in California banking. Chief of these have been the development of a number of powerful financial institutions through a process of merging and consolidation; the enormous growth of branch banking; a huge increase in bank resources; and the development of a larger and more metropolitan point of view on the part of California bankers than prevailed in the earlier days. It should also be noted that during this period much larger amounts of eastern capital have found their way into California for investment than ever before and the level of interest rates in the state has been reduced until it more nearly approximates that prevailing in the older financial centers.

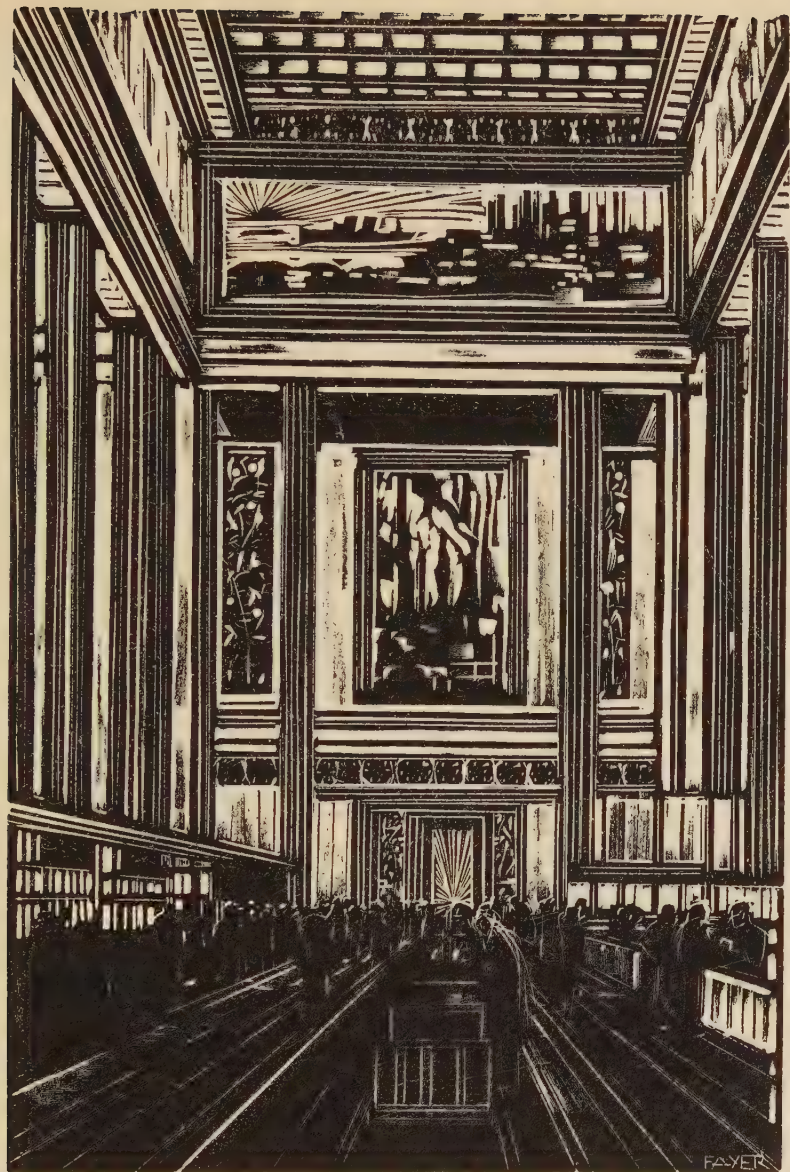
A list of the larger banks, some of which have developed through merger or by the absorption of smaller units, will be found elsewhere in this volume. The history of branch banking in California is too involved and has been too much a matter of acrimonious dispute to be given in detail here. It is sufficient to say that the issue first became of major importance when the Bank of Italy with its head office in San Francisco began in aggressive way under the leadership of A. P. Giannini to establish branches in nearly every strategic center of the state. By 1921 this bank had forty-four branches and assets of \$200,000,000. Six years later it and its affiliated companies had 279 branches and resources of approximately \$600,000,000.

Several other strong banking institutions followed the lead of the Bank of Italy in an active campaign for the establishment of branches in widely separated sections of the state. Numerous metropolitan banks also adopted the policy of establishing branches only within the cities in which the parent banks themselves were located. This program of branch banking, at least in its more aggres-

sive form, was vigorously opposed by many of the independent banks in the smaller cities and rural communities and until 1926 this opposition was able to retard somewhat the extension of the branch bank policy.

The enactment of the McFadden Bill by the Federal government in 1927 affected the California banking situation in several important particulars. Among these was the fact that under its provisions the Bank of Italy, which only a short time prior to the passage of the bill had acquired the Liberty Bank of America with its numerous branches, making it the third largest bank in the United States, almost immediately left the ranks of the state banks and obtained a national charter. This resulted in the transfer of a capital of over \$600,000,000 from the one system to the other and seemingly left the Bank of Italy "beyond the possibility of any competition in the future as the only bank likely to be established on a state-wide basis."

As already stated, the growth of bank resources in California during the past decade has reached enormous proportions; but in this, of course, the state has only shared the phenomenal prosperity and unprecedented increase of wealth which has characterized the nation as a whole. Detailed tables showing the growth of both state and national banks in California will be found in the Appendix, but certain additional items will be of interest here. In 1917 the resources of the national banks in California were approximately \$752,000,000; in 1927 they were \$1,779,000,000, or a gain of over 135 %. In 1917 the state commercial banks had resources of \$222,000,000; in 1927 these amounted to \$735,000,000, or a gain of over 230 %. In 1917 the resources of California savings banks were \$667,000,000; in 1927 they were \$1,305,000,000, or a gain of approximately 100 %. The total bank resources in 1917





were \$1,682,000,000; ten years later they had risen to \$3,834,000,000, representing a gain of about 128 %.

In addition to the brief history of banking given in the preceding pages, a description of California's financial progress, especially during the present century, requires some mention at least of the development of trust companies and of building and loan associations. The first of these latter companies was organized in California over fifty years ago, but it was not until 1893 that the state established a Building and Loan Commission and began to keep accurate records and statistics in this particular field. Poor management, overdevelopment, and hard times caused a heavy mortality among the early building and loan companies and it was not until the legislature in 1911 established over these institutions an effective state regulation that they came to enjoy that measure of public confidence which has since added so materially to their prosperity and to their usefulness in the development of the state.

From 1911 to the close of the World War the assets of these companies showed a regular but unimpressive growth. From that date on, however, they have undergone a phenomenal expansion. In 1920 the total assets of such associations were nearly \$48,000,000—a little more than double the figure of a quarter of a century before. In the seven years after 1920 these assets rose to approximately \$242,000,000, or a gain of over 400 %. At the close of this period there were a total of 191 building and loan companies in the state. The average assets of these companies were over \$1,200,000, whereas the average assets of the building and loan associations in the state in 1900 were only \$130,000.

In the number of building and loan companies the city of Los Angeles in 1927 led with thirty-one and San Francisco was second with twenty-three. There were seven in

San José and Oakland; five in Long Beach and Pasadena; four in Stockton and San Diego; and three in Bakersfield, Fresno, Sacramento and Santa Barbara. As in the case of banks, the policy of establishing branches is also being adopted to some degree by the building and loan associations. The effective part these companies have played in the real estate development of California and in supplying funds for the building of homes is moreover an intangible asset to the state which cannot easily be measured by a monetary standard.

As in the case of building and loan associations, the development of trust and title guaranty companies in California belongs to a comparatively recent period. The California Trust Company—the first of its kind in the state—was organized as early as 1868. A few other companies of similar character were incorporated from time to time during the next twenty years, and in 1891 the state enacted a law to govern in a loose sort of way the organization and operation of such companies. By 1901 there were thirty-four so-called “trust companies” or banks with “trust departments” doing business in the state, but only three of these were limiting their activities to the field strictly belonging to a trust company. The total resources of these California trust departments in the year just mentioned amounted to about \$7,800,000. In 1926 there were ten trust companies, in the strict sense of the word, in California and twenty-six trust departments of state banks. The total resources of these were slightly less than \$16,000,000 and they held court trusts of nearly \$182,000,000. In addition there were twenty-one national banks carrying on a trust business which reported a little over \$10,000,000 in court trusts.

Of the development of insurance companies, stock exchange transactions, the investment banking business and many other kindred matters this volume has

no space to deal. Some of these matters are covered in part, at least from a statistical standpoint, by material in the Appendix. The financial history of the state cannot be compressed within the limits of one chapter without the necessity of omitting much that may be both of interest and importance. Recognizing this, it is sufficient in closing to point out again that the financial institutions of the state during the past eight decades have grown like the mustard seed from insignificant beginnings to a position of strength and stability in keeping with the ever-expanding needs and ever-increasing and varied resources of the empire they are called upon to serve.*

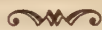
** The indebtedness of the authors for much of the material used in the preparation of this chapter is acknowledged to Dr. Ira D. Cross whose two volumes, *Financing an Empire*, must long remain the starting point of any financial history of the state.*

Appendix

APPENDIX

Mexican Land Grants

Upper California, when conquered by the Americans in 1846, contained about five thousand Mexican inhabitants, who, with their fathers and grandfathers, had lived here sixty or seventy years. Their chief occupation and the main source of their wealth were furnished by their herds of kine, horses, and sheep. Most of them dwelt in the country, upon ranches which had been granted to them for purposes of pasturage by the Mexican government. They held their lands under written titles, supposed to be, in most cases, legally perfect under the laws of Mexico. The government of that country never questioned or denied the validity of such grants as those held by the Californians. The grants were made to suit the habits and wants of the people. The Californians owned large herds, which were never fed on cultivated food, never kept in fields, nor placed under shelter. In a country where an almost unbroken drought reigns from May to November, and where cattle get no food, save wild and indigenous grasses, much more land is required to sustain a cow, than in those lands where careful cultivation and frequent rains provide a regular and certain abundance of food through the year. A fertile soil, like that of a large portion of the Mississippi Valley, will sustain five or six head of cattle to the acre; but here three acres of uncultivated fertile land are necessary for the support of one cow. Herds of thousands of kine were not uncommon in California under the Mexican dominion. To accommodate these cattle, great tracts of land were necessary. The public land was granted not by the acre, as in the American states, but by the square league (containing four thousand four hundred and thirty-eight acres), which was "the unit of measurement" in granting public lands outside of the towns. The government granted away its lands willingly, and without compensation; no pay was required; the only condition of the grant was, that the grantee should occupy the land, build a house on it, and put several hundred head of cattle on it. Whenever he promised to comply with these conditions, he could get a grant of any piece of public land, of eleven square leagues or less, for which he might petition. It was a grand Mexican homestead law; and the chief complaint made about



it was by the government, that the number of applicants for grants was not greater. The grants were made according to the Mexican land system, which would have been entirely unsuited to the wants and habits of the American people. The public lands in California were never surveyed. I do not know whether a Mexican surveyor was ever seen in California; I feel confident that no ranch was ever surveyed, and its boundaries described, with bearings and distances, previous to 1846. The descriptions of the land granted were very vague. In most cases a certain number of leagues were given, within well-known natural landmarks, which might include a district of fifty or a hundred miles square. In such case, the grantee could locate his ranch at any place within the limits. Sometimes a grant of so many leagues was made, at a place to which a name had been affixed by the Indians or Californians, and then the ranch included that spot; sometimes a ranch was described as bounded on one side by a range of mountains, on another by a river, and on other sides by ranches of older date. The Californians did not quarrel about their boundaries. If A's cattle crossed to B's ranch for better pasture in the summer, B's would probably go to A's at another season. The herds were not closely kept. The cattle roamed about almost in a wild state, often unseen of man for months. So wild were they, that though they knew very well that a man on horseback was a superior animal and their master, yet they considered a man on foot as a base and ferocious beast, and attacked him as they would attack a wolf. Their owner knew his property only by the brand placed on them when they were calves. From the time when the red-hot iron burned into their flesh, they roamed untouched by the hands of man, until fate decreed that they should be slaughtered to furnish fresh meat for their master's household, or hide and tallow for foreign commerce. Evidently this people, with such habits and such occupations, did not need to have their lands precisely described. Most of the titles were legally valid under the Mexican law. There was no motive to commit fraud, because land was of little value, and great tracts of rich soil were, up to the time of the American conquest, open to every petitioner. In most cases the actual occupation took place previous to 1840 and had never been interrupted. This occupation, the most conclusive proof of good faith, and an equitable title in itself, was notorious, and susceptible of proof by hundreds of witnesses.

The paper titles were mostly of indubitable genuineness, written by the hands of well-known officials, bearing regular numbers, referred to in public lists of land titles, and mentioned in government documents of various kinds. The proof of the genuineness of the title-papers, the good faith of the claimants, and the equitable validity of the claims, in nine cases out of ten, were abundant, and to any man at all acquainted with the subject, indubitable. It was then evidently the duty of the government of the United States to provide for the summary examination of the documents, and in every case, where genuine title-papers were found with ancient occupation, to order a survey for the establishment of boundaries, giving to the claimant at least a *prima facie* recognition of title, subject, perhaps, to investigation in the courts, if any person should see fit to assail the validity of the grant. But the Federal government pursued a policy very different from this plain duty. It delayed action through 1848, 1849, and 1850; and first, in 1851, passed an act nominally to "settle" private land claims in California, but really to unsettle them and the whole country, and keep them unsettled. That act provided for the organization of a court, or land commission, to try these claims; declared every grant of land in California to be legally void, though it might be equitably good; and provided that every equitably good claim should be lost to the owner, unless he should sue the United States in the court, and gain the suit there or on appeal; and there should be an appeal to the United States District Court, and thence to the United States Supreme Court. In all these courts, the claimant was to be opposed—that is, persecuted—by a law agent appointed by the United States, with instructions to contest every claim to the utmost. The land commission organized in San Francisco, on the first of January, 1852, and continued its sessions until the third of March, 1855, when it expired by limitation. It had received eight hundred and thirteen petitions. The owner of land, under grant from Mexico, was compelled to petition the government of the United States for the privilege of keeping it. Of these eight hundred and thirteen petitions, some were for lands which had never been occupied; in some cases there were two or three petitions from different persons, claiming the same piece of land under the same original grant. In some cases the original grantee had sold out a large ranch to a number of Americans, each of whom presented a petition for his



piece; and, in perhaps twenty-five or thirty cases, the title papers were forged; leaving about six hundred original ranches, which had been held under indubitably genuine written title and notorious occupation.

Thus there were eight hundred and thirteen important lawsuits, involving the titles to ten million acres,—nearly all the private lands in the state,—to be tried in one court. This tribunal had three judges,—good lawyers, and industrious, honest men. No serious complaint has ever been made against any of them. They did what they could. When, at the end of three years, the time came for them to close their court, they had dispatched all the cases. The trials had been fair; the hearings, deliberate and public; the opposition on the part of the United States law agents, stubborn. All the law agents were competent men, and no one can justly complain that the interests of the United States were neglected by any one of them. The claimants had been kept in litigation three years; they had been compelled to bring numerous witnesses from remote parts of the state, to pay for interpreters, to fee lawyers, at rates unheard of before in the world, to dance attendance upon the court, and to leave their homes, and their business for months at a time; but this was not enough. In every case where the land commission confirmed a claim, the United States government ordered an appeal to be taken to the United States District Court. This was nominally an appeal, but really an order for a new trial. Every question of fact and law was opened anew. Witnesses were again examined; the whole case was tried as in the original proceeding. There are two United States District Courts; one for the northern and another for the southern part of the state; each being the Appellate Court for all the lands within its own jurisdiction. Each of these two courts had other business besides land suits; and in the northern district, where the most important cases lay, the court had almost as much admiralty business alone as the judges of Federal districts in the Atlantic states have to manage. Both these Californian district judges were good men. In these courts, too, the "interests of the United States" were protected by able and industrious lawyers, instructed to oppose the Mexican land claims to the utmost. Seven years have elapsed since the first case was appealed from the land commission, and there are now a number of the cases still undecided in the District Courts; but in most of the cases decided,

the claims of the Mexican grant-holders were confirmed a second time. The Federal government, still not satisfied to let the claimants enter their lands, ordered appeals to the United States Supreme Court at Washington. This order was not accompanied by any proper provision to pay the clerks for making out the transcripts; and as the appeal could never be decided, and the claimant never get a perfect title, until the transcript should be sent up, and as the transcript never could go up until the clerk had received his fees, so the claimant was often compelled to pay the expenses of the transcript, amounting in some cases to several hundred dollars. This was an expense which custom and law impose upon the applicant, but in these cases the United States made no provision for repaying the respondent, although he was compelled to advance the money. After the appeals had been taken to the court of the last resort, the United States Attorney-General ordered the appeals to be dismissed in about four hundred cases, and in about forty cases the United States Supreme Court have given judgment in favor of the claimants, making four hundred and forty claims finally confirmed. About one hundred and forty claims have been abandoned by the claimants or finally rejected by the courts, and this estimate would leave two hundred and thirty cases still before the courts for adjudication upon their merits.

I have said that four hundred and forty cases have been finally confirmed, but final confirmation is not equivalent to final settlement. Up to 1859, it was supposed that when judgment on appeal had been rendered in private land claim, by the United States Supreme Court, in favor of the claimant, the litigation between him and the Federal government, so far as that title was concerned, was at an end. But a new law was passed, requiring the surveys of the Californian ranches to be reviewed by the United States District Courts. The exact boundaries of the claim could only be determined by a survey; and in large ranches, where the boundaries were not clearly defined, the location of the ranch became a matter of very great importance, often involving values of tens and even hundreds of thousands of dollars.

The consequence of the new law was that four hundred and twenty out of the four hundred and forty finally confirmed claims, are thrown into the courts again; their settlement is postponed for an indefinite time; the owners are burdened with new litigation, with



indefinite deferment of their hopes, with increased costs; and the country is again cheated out of quiet titles, permanent settlers, permanent improvements, and all those blessings of inestimable value which come only with numerous fixed and happy homes, and the best regulated social order.

While the government has thus, during twelve years, not simply refused to confirm the land-titles granted by Mexico, but made bitter and unceasing war upon them, and compelled the claimants to bear the expense of the warfare, these claimants have had to suffer from the assaults of other and still more dangerous and vexatious enemies—the squatters; who, while ostensibly left without countenance by the law, were really often engaged in an offensive and defensive alliance with the officers of the government. The squatters took the land, occupied it, drove away the owner's cattle, cut down his trees, fenced in his springs, paid him no rent, paid no taxes, by their influence forced him to pay the taxes on the land they were occupying, and assessed the taxes at most exorbitant rates. This system was not rare, but frequent—it was practiced on not one, but a hundred ranches. And then, with the money derived from the land thus obtained, they paid lawyers to appear in the name of the United States, contest the owner's title, and delay a decision; and, after decision, to get up a contest about the survey and delay a settlement of the boundaries. I do not mean to say that every Mexican claim is good, or every squatter wrong; my purpose in this article is only to complain of the vast injustice done to the owners of honest and legally valid claims, which are the great majority of all presented to the courts.

It is fourteen years since Americans became the rulers of California, and land-titles are no nearer a settlement than they should have been twelve years ago, if a proper system had been adopted. The great question about the boundaries, which should have been the main subject of action, is now just where it was then. The claimants have sold two-fifths of their land to pay the expenses of litigation—that is said to be a modest estimate by those familiar with the subject—and they are not yet done. They have been despoiled of two-fifths of their land, deprived of the possession of a large portion of the remainder, and prevented from selling it while they saw its value, in

many cases, decreasing steadily with the decay of business consequent on the exhaustion of the richest placer mines.

The injury done to the country by the delay in the settlement of the land-titles is, to a considerable extent, irreparable. That delay has caused us to lose, or has prevented our gaining, a population of a million citizens, of the most valuable class. Two hundred thousand men have left our state forever—half of them because they could not get permanent homes here—and they prevented as many more from coming, who would have come if they could have had certain land-titles. Not less than fifty thousand men have left us because of the unsteadiness of business and the lack of employment, caused by want of unquestioned ownership of the soil. Thus I estimate that the delay in settling our land-titles has cost us two hundred and fifty thousand men, representing a total population of one million persons. The golden flood, the grand rush of business, the unexampled prosperity which passed over the state from 1849 to 1853, has passed away forever; it is too late to repair the damage; fifty years of peace and justice cannot place California where she now would have been, had justice and sound policy been adopted twelve years ago.

Thus I have explained the reasons which caused the desertion of California by many of the best men who have ever visited her shore. Fortunately, everything in California is gradually becoming more stable; titles in agricultural districts are gradually being settled; and it is now almost established beyond a doubt, that within a few years the Federal government must sell a considerable portion of the land in the mining counties, at least those counties now occupied by miners. The mining, the agriculture, the commerce, the population, and the wealth, must continue to increase, and her name shall be glorious in the records of industry and on the pages of universal history.

Hittell, *Resources of California* pp. 453-461.

APPENDIX

ESTIMATED NUMBER, VALUE PER HEAD AND TOTAL VALUE OF THE DIFFERENT CLASSES OF LIVE STOCK ON FARMS IN CALIFORNIA AND THE UNITED STATES ON JANUARY 1, 1920-1928

ITEM AND YEAR	CALIFORNIA			UNITED STATES		
	Number (000 omitted)	Value per head	Total value (000 omitted)	Number (000 omitted)	Value per head	Total value (000 omitted)
Horses and colts.....1920	402	\$98.00	\$39,396	19,848	\$96.52	\$1,915,729
1921	375	98.00	36,750	19,134	84.57	1,618,162
1922	360	84.00	30,240	18,564	71.18	1,321,386
1923	335	83.00	27,805	17,943	70.65	1,267,673
1924	335	85.00	28,475	17,222	65.48	1,127,697
1925	314	78.00	24,448	16,489	64.26	1,059,553
1926	302	76.00	22,938	15,830	65.50	1,036,843
1927	295	76.00	22,313	15,145	64.13	971,258
1928	290	73.00	21,302	14,541	67.07	975,298
Mules and mule colts.....1920	63	120.00	7,560	5,475	148.46	812,819
1921	60	123.00	7,380	5,586	117.52	656,467
1922	61	103.00	6,283	5,638	89.14	502,571
1923	62	105.00	6,510	5,702	87.17	497,043
1924	59	106.00	6,254	5,730	85.90	492,207
1925	56	95.00	5,315	5,725	82.73	473,646
1926	54	92.00	4,964	5,740	81.49	467,760
1927	53	89.00	4,723	5,679	74.49	423,010
1928	53	83.00	4,420	5,566	79.60	443,097
Milk cows—2 years old and over.....1920	515	97.00	49,955	21,427	85.56	1,833,294
1921	530	95.00	50,350	21,408	64.13	1,372,895
1922	550	76.00	41,800	21,788	50.97	1,110,534
1923	580	76.00	44,080	22,063	50.94	1,123,889
1924	595	76.00	45,220	22,255	52.30	1,163,937
1925	579	73.00	42,267	22,481	50.67	1,139,159
1926	596	77.00	45,892	22,188	57.34	1,272,328
1927	596	78.00	46,488	21,818	62.43	1,362,006
1928	602	83.00	49,966	21,948	77.43	1,699,526
All other cattle.....1920	1,493	\$1.90	77,553	47,444	42.19	2,001,443
1921	1,470	44.50	65,450	45,776	30.59	1,400,461
1922	1,498	34.30	51,384	45,476	23.15	1,052,676
1923	1,500	34.40	51,600	44,093	24.80	1,093,660
1924	1,547	33.35	51,598	42,252	24.44	1,032,526
1925	1,340	30.55	40,932	39,515	23.94	946,065
1926	1,322	35.16	46,480	36,934	27.50	1,015,601
1927	1,360	37.00	50,316	35,054	29.87	1,047,071
1928	1,393	42.80	59,617	33,748	38.95	1,314,560
Sheep and lambs.....1920	2,900	10.90	31,610	40,243	10.46	420,942
1921	2,750	6.70	18,425	38,690	6.28	242,973
1922	2,475	5.30	13,118	36,186	4.80	173,693
1923	2,600	8.10	21,060	36,212	7.53	272,676
1924	2,890	9.00	26,010	36,876	7.91	291,689
1925	3,045	9.20	28,140	38,112	9.70	369,612
1926	3,200	10.60	34,078	39,730	10.51	417,630
1927	3,392	10.00	33,806	41,846	9.71	406,231
1928	3,528	11.30	40,014	44,545	10.22	455,224
Swine—including pigs.....1920	909	18.00	16,362	59,813	19.08	1,141,232
1921	818	14.50	11,861	58,711	12.98	762,069
1922	818	11.70	9,571	59,355	10.06	597,111
1923	818	11.80	9,652	68,447	11.58	792,616
1924	624	10.50	6,552	65,937	9.72	640,908
1925	532	10.20	5,426	55,568	12.38	687,858
1926	468	15.20	7,114	52,148	15.21	793,139
1927	585	17.00	9,945	54,408	15.97	868,842
1928	614	13.00	7,982	58,969	12.03	709,217

California Crop Reports, 1927.



ESTIMATED ACREAGE OF CITRUS FRUITS BY COUNTIES, 1928

	GRAPEFRUIT		LEMONS		ORANGES	
	Bearing	*Non-bearing	Bearing	*Non-bearing	Bearing	*Non-bearing
The State.....	7,828	3,118	42,864	2,216	187,281	19,322
NORTHERN CALIFORNIA—						
Butte.....					1,540	23
Colusa.....	25		720		48	4
Glenn.....	21		93		730	
Placer.....					235	
Sacramento.....	40		30		1,425	
Solano.....					14	
Tehama.....					22	4
Yolo.....					17	2
Yuba.....					43	
CENTRAL CALIFORNIA—						
Fresno.....	10		280	20	4,550	150
Kern.....	12	23	8		1,399	75
Merced.....					17	90
San Joaquin.....					130	1
Stanislaus.....			18	1	136	1
Tulare.....	1,181	4	2,688	11	36,306	268
SOUTHERN CALIFORNIA—						
Imperial.....	3,679	2,500			57	42
Los Angeles.....	512	46	11,520	224	40,427	3,256
Orange.....	93	51	6,531	597	39,003	10,055
Riverside.....	559	433	3,694		15,764	272
San Bernardino.....	1,543	26	5,434	20	39,452	659
San Diego.....	135	32	4,382	443	1,676	1,503
Santa Barbara.....	8		1,625	115	165	75
Ventura.....	10	3	5,841	785	4,125	2,842

*1927 plantings not included.

Estimated acreage planted in state, 1927: Grapefruit, 1,478; lemons, 451; oranges, 3,197.

California Crop Reports, 1927.

APPENDIX

ESTIMATED PRODUCTION OF DRIED FRUITS AND NUTS, CALIFORNIA

YEAR	Apples, tons	Pears, tons	Peaches, tons	Apricots, tons	Prunes, tons	*Raisins, tons	Figs, tons	Almonds, tons	Walnuts, tons
1890.....		300			8,000	19,000			
1891.....	1,400	500	6,600	6,750	13,750	26,000	180		
1892.....	1,375	1,125	6,750	6,250	11,250	28,500	250		
1893.....	1,900	1,320	8,400	4,750	26,090	42,500	450		
1894.....	2,925	3,265	15,270	14,375	22,375	51,500	770		
1895.....	2,280	2,700	12,250	5,325	32,375	45,500	1,375		3,385
1896.....	1,175	4,825	8,230	3,370	27,600	34,000	1,080		6,200
1897.....	2,625	3,175	13,575	15,067	48,890	47,000	1,625		4,610
1898.....	1,760	3,310	5,480	4,120	45,210	40,500	2,390	450	5,650
1899.....	2,950	2,880	17,400	5,800	57,114	36,000	2,900	2,320	5,580
1900.....	3,180	7,275	17,170	14,040	87,000	47,000	3,000	2,740	5,430
1901.....	3,225	3,288	14,750	7,875	40,800	37,000	3,250	1,500	6,900
1902.....	4,875	2,625	25,200	18,750	98,500	54,000	3,600	3,270	8,570
1903.....	1,800	2,325	18,000	10,500	82,500	60,000	3,000	3,200	5,500
1904.....	1,500	1,750	11,500	8,500	67,500	40,000	2,850	800	7,590
1905.....	2,500	1,750	18,000	1,800	31,250	45,000	3,200	2,100	6,400
1906.....	2,500	1,500	10,000	3,000	92,500	50,000	3,000	750	7,000
1907.....	3,300	500	15,000	1,100	53,000	75,000	4,500	750	7,400
1908.....	3,350	2,500	23,000	19,000	28,500	65,000	2,900	2,900	9,200
1909.....	3,000	1,250	20,000	14,000	75,000	70,000	4,000	1,500	9,350
1910.....	3,000	1,000	25,000	15,250	40,000	62,500	3,775	3,300	9,600
1911.....	3,500	2,000	17,250	11,000	95,000	65,000	5,500	1,450	12,500
1912.....	3,600	1,750	29,000	20,000	102,500	95,000	5,000	3,000	11,250
1913.....	1,900	1,000	37,500	10,500	48,000	66,000	5,000	1,100	11,350
1914.....	4,500	1,500	35,100	20,500	56,000	91,000	6,500	2,250	8,900
1915.....	4,000	1,000	32,250	19,500	92,500	128,000	8,600	3,500	14,825
1916.....	4,500	800	28,000	11,000	78,500	132,000	9,900	3,400	14,600
1917.....	8,500	1,100	39,000	15,500	109,000	163,000	8,600	4,000	16,500
1918.....	6,250	1,000	20,000	15,000	45,000	167,000	9,200	5,100	19,950
1919.....	12,500	4,500	35,000	15,500	135,000	182,500	12,000	7,250	28,100
1920.....	5,500	2,700	27,000	9,500	97,250	177,000	12,300	5,500	21,000
1921.....	7,000	1,200	21,000	12,000	100,000	145,000	9,600	6,000	19,500
1922.....	10,500	5,000	28,000	15,500	110,000	237,000	11,000	8,500	27,000
1923.....	9,500	2,000	26,000	30,000	130,000	290,000	9,500	11,000	25,000
1924.....	10,000	3,150	24,500	16,000	139,000	170,000	8,500	8,000	22,500
1925.....	5,755	3,500	16,170	18,000	146,000	200,000	9,600	7,500	36,000
1926.....	10,500	4,250	28,200	18,800	150,000	285,000	11,350	16,000	15,000
1927.....	6,250	3,440	17,230	25,000	203,000	300,000	12,000	12,000	48,500

*Figures on raisins include all classes of dried grapes.
California Crop Reports, 1927.

MARCH OF INDUSTRY

A—FARM VALUE, CALIFORNIA FIELD CROPS, 1909-1925

	1925	1924	1923	1921	1919	1909
Corn.....	\$3,571,000	\$4,012,000	\$4,838,000	\$3,126,000	\$8,535,000	\$1,077,000
Wheat.....	16,956,000	8,709,000	17,450,000	8,940,000	34,370,000	6,324,000
Oats.....	3,168,000	1,556,000	3,159,000	1,928,000	4,092,000	2,637,000
Barley.....	24,180,000	17,246,000	23,148,000	16,632,000	37,575,000	26,442,000
Rice.....	8,055,000	7,246,000	6,352,000	8,384,000	24,831,000	None
Grain Sorghum.....	3,201,000	3,459,000	4,455,000	3,038,000	6,597,000	726,000
Beans.....	18,737,000	12,568,000	18,776,000	10,130,000	28,540,000	6,295,000
Hay—Tame.....	75,796,000	100,797,000	73,752,000	55,033,000	83,214,000	38,455,000
Hay—Wild.....	1,760,000	1,428,000	1,520,000	1,288,000	2,220,000	2,028,000
Potatoes.....	13,020,000	6,624,000	8,736,000	13,468,000	14,672,000	4,879,000
Sweet Potatoes.....	1,882,000	1,478,000	1,139,000	1,200,000	1,862,000	356,000
Onions.....	2,668,000	1,783,000	2,884,000	3,116,000	4,854,000	473,000
Sugar Beets.....	3,675,000	7,321,000	7,938,000	7,878,000	11,534,000	4,321,000
Hops.....	1,600,000	1,056,000	1,332,000	3,750,000	10,742,000	1,731,000
Cotton—Lint.....	12,808,000	8,947,000	8,700,000	2,340,000	10,019,000	12,000
Cotton—Seed.....	1,717,000	1,082,000	1,026,000	170,000	1,495,000	1,000
Total.....	\$193,484,000	\$185,312,000	\$185,205,000	\$140,421,000	\$285,142,000	\$95,757,000

From—Economic Resources and Extractive Industries of California

B—FARM VALUE, CALIFORNIA FRUIT CROPS, 1909-1925

	1925	1924	1923	1921	1919	1909
Apples.....	\$6,918,000	\$10,862,000	\$7,875,000	\$8,775,000	\$11,890,000	\$2,902,000
Peaches.....	14,430,000	11,550,000	9,120,000	13,020,000	25,800,000	4,574,000
Pears.....	9,412,000	8,778,000	6,650,000	5,375,000	8,280,000	1,661,000
Apricots.....	7,560,000	6,532,000	5,250,000	5,000,000	14,000,000	2,769,000
Plums.....	2,295,000	1,775,000	2,070,000	2,226,000	2,520,000	5,474,000
Prunes.....	15,950,000	15,290,000	13,000,000	13,000,000	32,400,000	—
Cherries.....	1,760,000	1,890,000	2,720,000	1,625,000	1,860,000	952,000
Figs.....	1,045,000	850,000	855,000	1,392,000	1,800,000	260,000
Olives.....	840,000	598,000	1,105,000	738,000	1,408,000	401,000
Lemons.....	18,000,000	17,835,000	10,771,000	13,973,000	6,988,000	2,977,000
Oranges.....	79,200,000	65,629,000	49,000,000	36,400,000	42,702,000	12,952,000
Almonds.....	3,000,000	2,400,000	2,860,000	1,920,000	3,190,000	700,000
Walnuts.....	13,420,000	10,350,000	10,000,000	7,800,000	15,455,000	2,249,000
Wine Grapes.....	22,910,000	22,050,000	17,120,000	25,420,000	20,000,000	—
Table Grapes.....	7,776,000	13,000,000	15,470,000	15,750,000	15,000,000	10,847,000
Raisins.....	14,400,000	11,900,000	20,300,000	27,550,000	38,325,000	—
Raisin Grapes marketed fresh.....	9,450,000	3,600,000	—	—	—	—
Total.....	\$228,366,000	\$204,889,000	\$174,166,000	\$179,965,000	\$241,628,000	\$48,718,000

From—Economic Resources and Extractive Industries of California

MANUFACTURING

Average number of wage earners and value of products for cities of 10,000 inhabitants or over (as 1920); 1925, 1919, 1914, 1909, 1904, 1899. Arranged according to industrial importance in 1925. (From U. S. Census Reports).

CITY	Average number of wage-earners in manufacturing industries										VALUE OF PRODUCTS									
	1925	1919	1914	1909	1904	1899	1925	1919	1914	1909	1904	1899	1925	1919	1914	1909	1904	1899	1925	1919
1. Los Angeles	58,026	47,118	23,744	17,327	10,424	5,173	531,827,107	728,184,143	510,457,993	68,886,274	34,814,475	15,133,696	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
2. San Francisco	41,377	48,530	31,758	28,244	38,429	32,555	399,986,444	447,321,277	162,299,795	137,788,233	137,788,233	110,023,567	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
3. Oakland	15,357	23,547	7,706	6,905	3,553	2,476	144,840,830	434,755,470	28,521,828	22,342,926	9,014,705	5,368,258	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
4. Richmond	4,185	4,505					66,383,827	75,315,608	10,806,117	5,482,747		3,291,641	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
5. San Jose	3,090	3,090	2,029	1,399	1,260	1,221	66,025,821	25,135,500	7,321,044	4,435,374		651,286	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
6. Berkeley	3,228	2,319	1,358	1,084	338	211	43,414,726	28,331,212	16,520,109	11,090,195		7,521,201	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
7. Fresno	3,401	3,903	2,903	1,938	1,915	819	34,762,024	48,943,823	16,382,670	14,006,303		9,496,633	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
8. Sacramento	6,053	6,341	5,334	4,521	4,203	3,686	34,368,260	7,341,988,980	9,020,895	8,420,990		669,682	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
9. San Diego	3,177	3,427	2,060	1,071	541	255	28,214,115	20,225,723	11,294,888	927,180			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
10. Long Beach	1,712	3,769	885	277			25,862,553	14,384,769	11,293,483	11,470,425			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
11. Stockton	2,755	3,534	1,919	1,571	1,333	1,185	25,216,826	30,675,898	2,612,669	1,659,705			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
12. San Bernardino	1,744	2,107	1,077	729			7,270,992	7,473,789	1,921,891	1,724,364			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
13. Pasadena	1,043	1,044	536	499	318	177	7,230,182	5,767,527	3,960,268	2,480,374			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
14. Eureka	1,406	977	799	946	946		5,315,578	3,960,268	5,699,051	2,818,744			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
15. Bakersfield	1,064	1,178	894	746			5,202,112	5,699,051	2,928,373	2,786,176			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
16. Alameda	1,145	6,787	1,087	915	279	372	5,047,395	25,440,598	2,786,176	2,554,417			1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
17. Glendale	765	216					4,863,991	1,173,720					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
18. Santa Ana	677	628					4,388,409	3,627,749					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
19. Riverside	402	421	277	263			3,166,522	2,354,476					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
20. Pomona	537	535	322	224			2,827,078	3,754,153					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
21. Santa Monica	502	136					2,176,988	519,241					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
22. Santa Barbara	291	481	276	239			2,157,439	1,945,533					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
23. Santa Cruz	229	572	401	274			1,392,948	3,944,114					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
24. Vallejo		478	292	203				18,056,382					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
25. Venice (?)		48						193,413					1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
Remainder of State (?)	95,603	78,381	53,747	45,774	37,016	29,271	1,010,880,027	789,826,784	323,847,940	235,877,315	117,335,110	106,139,840	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000
Whole State	249,551	243,692	139,374	115,149	100,355	77,401	2,443,024,194	1,981,204,701	712,229,193	528,741,708	367,218,528	257,988,099	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000	1,000,000,000

(1) Includes Vallejo, for which separate statistics can not be given without disclosing operations of individual establishments.

(2) Incorporated in Los Angeles. Superior figures indicate rank.

MARCH OF INDUSTRY

INDUSTRY (Table A)

Table showing number of establishments, average number of wage earners, and value of product of all industries in California with an annual output of \$2,000,000 or over, ranked according to value of output. Only concerns with an annual output of over \$500 are considered in these statistics.

Compiled from U. S. Census Reports

INDUSTRY	1925			
	No. of establishments	Wage earners	Value of product	Rank among United States
Petroleum Refining.....	57	7,465	\$369,581,955	2
Canning and Preserving—Fruits and Vegetables.....	309	23,384	181,272,830	1
Slaughtering and Meat Packing.....	102	3,821	115,787,976	10
Foundry and Machine Shop Products.....	550	13,258	80,653,577	11
Motor Vehicles—Not Motorcycles.....	24	3,213	78,442,568	11
Printing, Newspapers and Periodicals.....	577	5,817	77,876,415	5
Lumber and Timber—General.....	154	24,954	72,815,489	5
Lumber, Planing-Mill Products.....	370	9,184	68,910,812	1
Bread and Bakery Products.....	1,011	8,437	68,029,184	4
Motion Pictures.....	72	3,722	62,821,194	1
Butter, Cheese, Milk—Evaporated and Condensed.....	162	1,831	56,519,954	7
Flour, Feed, and Grain-Mill Products.....	81	1,200	38,559,610	10
Printing, Book and Job.....	745	5,355	37,521,260	6
Car Construction and Repair—Steam.....	64	13,562	37,131,450	8
Furniture.....	259	6,722	36,726,511	9
Food Preparations—Not Classified.....	205	1,813	35,133,055	7
Tin Cans and Tinware.....	14	2,563	32,087,288	3
Electrical Machinery.....	110	3,491	29,781,335	12
Cement.....	10	2,870	26,234,060	2
Iron and Steel.....	11	4,225	23,916,754	11
Gas.....	47	1,811	22,376,894	6
Paints and Varnishes.....	64	1,183	20,190,212	10
Clay Products—Not Pottery.....	81	5,054	18,846,013	5
Clothing, Women's.....	181	2,974	18,861,795	7
Oils, Unclassified.....	14	354	18,066,359	2
Canning and Preserving—Fish, Clams, etc.....	35	2,844	17,873,316	1
Confectionery.....	191	2,670	16,852,177	7
Motor Vehicles—Parts and Bodies.....	130	2,093	16,827,452	11
Clothing, Men's.....	89	3,289	16,396,395	9
Soap.....	30	603	15,257,272	8
Sugar, Beet.....	7	1,032	15,068,764	4
Engines and Water-Wheels.....	11	1,503	14,890,918	7
Structural Iron—Not Rolling Mill.....	112	2,377	14,620,457	7
Ice Cream.....	112	1,489	14,340,655	5
Ship Building, Steel and Wooden.....	51	3,719	14,164,489	5
Chemicals.....	47	1,575	14,076,568	8
Paper and Wood Pulp.....	10	1,385	13,409,367	16
Pumps.....	44	1,654	13,281,901	3
Copper, Tin, Sheet and Galvanized Iron.....	238	1,643	11,005,941	5
Leather, Tanned, Finished, Curried.....	19	1,138	10,508,296	12
Boxes, Wooden.....	42	1,614	10,453,272	4
Ice.....	168	1,750	10,269,347	5
Boxes, Paper.....	43	1,646	9,732,422	11
Millinery and Lace.....	96	2,168	9,126,579	5
Bags, Non-Paper—Not included in Textile Mills.....	6	587	8,880,165	8
Wall Plaster, Board, and Composition.....	33	955	8,840,641	3
Stoves, Gas, and Oil.....	49	1,300	8,600,425	6
Rice Cleaning and Polishing.....	13	189	8,592,328	2
Roofing Materials—Not Wood, Slate, Tile, Asbestos, Metal.....	9	485	8,135,211	6
Concrete Products.....	124	1,524	8,101,227	1
Marble, Slate, and Stone.....	81	1,224	7,997,548	8
Beverages.....	155	1,003	7,938,603	7
Paving Materials—Not Brick.....	30	1,266	7,788,964	4
Glass.....	16	1,425	7,078,511	8

Continued and totaled on page 267

APPENDIX

INDUSTRY (Table A)

(Continued and totaled)

INDUSTRY	1925			
	No. of establishments	Wage earners	Value of product	Rank among United States
Plumber's Supplies—Not Pipe, Marble, Slate or Porcelain.....	17	1,565	\$6,935,660	7
Car Construction and Repair—Electric.....	22	2,890	6,789,591	4
Mattresses and Bed Springs.....	82	907	6,020,109	6
Patent Medicines.....	76	437	5,987,385	10
Explosives.....	3	404	5,964,400	4
Knit Goods.....	39	1,123	5,924,436	18
Wire Work.....	27	657	5,863,787	9
Rubber Goods.....	18	649	5,776,935	9
Brass, Bronze.....	55	842	5,606,018	12
Lithographing.....	19	791	5,533,027	5
Smelting and Refining, not Gold or Silver, Iron from Ore.....	8	224	5,254,201	6
Chocolate and Cocoa—Not Confectionery.....	5	282	5,201,860	4
Flavoring Extracts and Syrups.....	34	272	5,234,713	6
Bookbinding and Blank Books.....	51	941	5,196,359	5
Oil, Cake, and Meal, Cottonseed.....	9	254	4,684,235	12
Awnings, Tents, Sails.....	26	370	4,236,053	3
Gas and Electric Fixtures.....	46	669	4,049,057	4
Sausage, and Sausage Casings—Not Packing House Products.....	46	337	3,927,176	9
Fertilizers.....	18	329	3,869,282	15
Wood Preserving.....	8	195	3,762,877	8
Window Shades and Fixtures.....	59	348	3,712,249	5
Wrought Pipe—Not made in Rolling Mills.....	8	386	3,501,931	2
Signs and Advertising Novelties.....	61	565	3,490,543	6
Boots and Shoes—Not Rubber.....	12	816	3,455,620	15
Shirts.....	22	842	3,391,511	10
Steam Packing.....	12	704	3,368,508	6
Cooperage.....	14	304	3,143,187	9
Jewelry.....	74	396	3,126,769	6
Pottery, and Porcelain Ware.....	15	693	3,059,899	9
Agricultural Implements.....	18	452	2,924,955	10
Wool Pulling.....	3	109	2,718,703	3
Alcohol, Ethyl.....	3	120	2,713,934	5
Photo-Engraving, not done in Printing Establishments.....	41	335	2,488,002	6
Caskets, Coffins, etc.....	16	299	2,476,829	10
Grease and Tallow—Not Lubricating.....	14	188	2,348,856	7
Doors, Shutters—Iron and Steel.....	8	339	2,298,021	4
Salt.....	14	370	2,242,085	6
Ammunition.....	3	285	2,173,049	3
Mirrors, Framed and Unframed.....	24	237	2,047,858	5
All Industries*	8,298	226,339	\$2,128,753,451	8

*1925 statistics are not quite comparable with those of previous years because of the omissions of coffee and spice grinding.

MARCH OF INDUSTRY

INDUSTRY (Table B)

INDUSTRY	1919		
	No. of establishments	Wage earners	Value of product
Petroleum Refining.....	45	5,132	\$213,292,000
Canning and Preserving—Fruits and Vegetables.....	303	19,575	189,956,000
Shipbuilding, Steel.....	18	46,052	179,152,000
Slaughtering and Meat Packing.....	91	3,405	92,554,000
Flour and Grist-Mill.....	134	1,779	65,448,000
Foundry and Machine Shops.....	595	9,827	51,337,000
Bread and Bakery Products.....	1,095	5,394	48,957,000
Lumber and Timber Products.....	195	16,957	47,311,000
Lumber, Planing-Mill.....	325	6,215	42,832,000
Car Construction and Repair—Steam.....	60	16,213	41,927,000
Butter.....	121	1,268	40,660,000
Automobiles.....	12	1,327	36,627,000
Printing, Newspapers.....	764	4,770	34,343,000
Tinware.....	16	2,915	26,807,000
Sugar, Beet.....	10	1,512	26,354,000
Coffee and Spice.....	70	796	26,311,000
Automobile Repairing.....	1,648	5,992	24,894,000
Confectionery and Ice Cream.....	298	4,083	23,226,000
Leather.....	21	1,453	21,416,000
Gas.....	57	2,444	20,441,000
Rice, Cleaning and Polishing.....	14	337	20,264,000
Printing, Book and Job.....	661	3,818	19,871,000
Iron and Steel Mills.....	8	3,476	18,192,000
Canning and Preserving—Fish.....	57	2,989	17,483,000
Oil—Unclassified.....	24	411	16,777,000
Food.....	172	1,049	16,633,000
Clothing, Women's.....	165	3,124	14,246,000
Furniture.....	176	2,883	13,640,000
Bags—Not Paper.....	6	487	13,415,000
Engines, Steam, Gas, Water.....	23	2,231	12,687,000
Condensed Milk.....	11	544	11,968,000
Pickles, Preserves, Sauces.....	84	1,719	11,840,000
Paints.....	41	716	11,434,000
Liquors, Malt.....	20	935	11,419,000
Clothing, Men's.....	62	2,411	11,405,000
Electrical Machinery.....	73	2,008	11,368,000
Soap.....	27	608	11,295,000
Cement.....	8	1,316	11,258,000
Tobacco, Cigars, Cigarettes.....	244	1,677	10,767,000
Chemicals.....	49	1,465	10,539,000
Photographing Materials.....	31	824	9,672,000
Agricultural Implements.....	34	1,578	9,490,000
Liquors, Vinous.....	287	600	9,142,000
Boxes, Wooden.....	46	1,657	8,909,000
Automobile—Bodies and Parts.....	253	1,681	7,735,000
Copper, Tin, and Sheet Iron.....	322	1,462	7,160,000
Ice Manufacturing.....	117	1,535	7,112,000
Shipbuilding, Wooden.....	49	1,478	6,731,000
Explosives.....	3	611	6,408,000
Paper and Wood Pulp.....	7	806	5,805,000
Chocolate and Cocoa Products.....	4	252	5,663,000
Sulphuric, Nitric, and Mineral Acids.....	4	576	5,440,000
Brick, Tile, Terra-Cotta, Clay.....	60	1,747	5,211,000
Iron and Steel, Wrought Pipe.....	16	687	5,024,000
Boxes, Paper.....	31	1,253	4,988,000
Rubber Goods.....	20	513	4,941,000
Wirework.....	26	320	4,860,000
Structural Ironwork.....	58	742	4,834,000
Lithographing.....	11	696	4,583,000
Roofing Material.....	9	506	4,568,000
Cooperage.....	15	390	4,191,000
Mattresses.....	49	609	4,157,000
Car, and Car Construction—Electric.....	22	1,731	4,058,000
Liquors, Distilled.....	3	234	3,968,000

Continued and totaled on page 269

APPENDIX

INDUSTRY (Table B)

(Continued and totaled)

INDUSTRY	1919		
	No. of establishments	Wage earners	Value of product
Millinery.....	67	1,041	\$3,902,000
Cheese.....	48	210	3,792,000
Glass.....	7	1,333	3,761,000
Fertilizers.....	17	284	3,610,000
Mineral, and Soda Water.....	195	468	3,518,000
Pumps, Steam and Power.....	11	406	3,419,000
Babbitt Metal, and Solder.....	7	111	3,349,000
Brass, Bronze, and Cooper.....	45	492	3,316,000
Boots and Shoes.....	14	616	3,247,000
Knit Goods.....	21	695	2,878,000
Awnings, Tents, and Sails.....	47	327	2,866,000
Marble and Stone Work.....	128	530	2,830,000
Jewelry.....	88	650	2,555,000
Smelting Copper.....	3	289	2,532,000
Fur Goods.....	33	325	2,515,000
Bookbinding and Blank Books.....	40	623	2,463,000
Grease and Tallow.....	19	163	2,427,000
Patent Medicines.....	90	226	2,383,000
Salt.....	24	446	2,286,000
Artificial Stone.....	114	608	2,204,000
Men's Furnishings.....	8	263	2,205,000
Shirts.....	18	530	2,172,000
Gloves, and Mittens—Leather.....	27	665	2,049,000
All Industries.....	10,351	225,102	\$1,741,275,000

MARCH OF INDUSTRY

INDUSTRY (Table C)

INDUSTRY	1909		
	No. of establishments	Wage earners	Value of product
Lumber and Timber Products.....	644	22,935	\$45,000,000
Slaughtering and Meat Packing.....	94	1,641	34,280,000
Canning and Preserving.....	196	7,757	32,915,000
Foundry and Machine Shops.....	543	8,377	26,731,000
Flour and Grist-Mill.....	125	948	25,188,000
Printing and Publishing.....	1,240	7,556	25,032,000
Cars, and Car Repairs—Steam.....	42	9,342	18,719,000
Petroleum Refining.....	29	930	17,878,000
Bread and Bakery Products.....	864	4,018	17,710,000
Butter, Cheese, and Condensed Milk.....	161	597	12,761,000
Leather.....	40	1,398	9,367,000
Liquors, Malt.....	83	1,296	9,319,000
Liquors, Vinous.....	181	1,287	8,937,000
Gas.....	74	1,666	8,927,000
Copper, Tin, and Sheet Iron.....	233	1,938	6,804,000
Cement.....	8	2,407	6,504,000
Coffee and Spice.....	44	352	6,492,000
Foods.....	129	716	5,508,000
Liquors, Distilled.....	33	193	5,353,000
Clothing, Men's—Including Shirts.....	74	2,385	5,121,000
Furniture.....	129	1,653	4,496,000
Paint.....	35	396	3,758,000
Confectionery.....	89	1,002	3,624,000
Iron and Steel.....	5	1,038	3,520,000
Marble and Stone.....	128	1,415	3,380,000
Tobacco.....	332	1,465	3,360,000
Cars, and Car Repairs—Electric.....	21	1,902	3,009,000
Brick and Tile.....	78	1,703	2,756,000
Agricultural Implements.....	25	622	2,670,000
Ice.....	77	666	2,331,000
Fertilizers.....	15	226	2,313,000
Leather Goods.....	88	710	2,244,000
Cooperage.....	38	416	2,167,000
Mattresses.....	35	528	2,164,000
Carriages and Wagons.....	155	760	2,052,000
Boots and Shoes.....	18	695	1,924,000
All Industries.....	6,105	92,936	\$374,314,000

APPENDIX

INDUSTRY (Table D)

INDUSTRY	1899		
	No. of establishments	Wage earners	Value of product
Sugar and Molasses, Refining†	6	919	\$15,909,998
Slaughtering and Meat Packing	58	925	15,717,712
Lumber and Bricks	313	5,806	13,764,647
Flouring and Grist-Mill	124	857	13,100,944
Canning and Preserving—Fruits and Vegetables	136	7,486	13,081,829
Foundry and Machine Shop	250	4,782	12,047,149
Carpentering	511	2,339	7,816,386
Cars, and Car Repairs—Steam	29	4,920	7,553,626
Leather	45	1,454	7,405,981
Printing, Newspapers and Periodicals	512	2,683	6,858,192
Tin, Copper, Sheet Iron Work	254	2,149	6,279,513
Clothing, Men's—Custom	688	2,332	5,172,688
Liquors, Malt	99	950	5,085,462
Bread and Bakery Products	359	1,548	4,876,688
Lumber, Planing-Mill Products	136	2,022	4,807,690
Bottling	78	420	4,800,160
Cooperage	33	385	4,508,259
Explosives	7	906	4,283,818
Liquors, Vinous	187	526	3,937,871
Clothing, Men's—Factory	96	2,410	3,869,891
Plumbing, Gas and Steam Fitting	414	1,281	3,587,933
Butter, Cheese, and Condensed Milk	178	402	3,582,942
Sugar, Beet	7	909	3,499,996
Blacksmithing and Wheelwrighting	1,349	1,234	3,236,424
Gas	41	707	3,162,333
Coffee and Spice	40	267	3,135,558
Printing, Book	232	1,608	2,743,126
Confectionery	204	940	2,389,618
Painting	439	1,480	2,306,487
Paving, and Paving Materials	52	2,123	2,149,974
Millinery	306	904	2,114,749
Chemicals	21	390	2,061,470
Bags—Not Paper	9	225	2,034,000
Saddlery and Harness	347	684	2,014,876
Clothing, Women's—Dressmaking	365	1,604	2,013,499
Clothing, Women's—Factory	59	1,311	1,981,136
All Industries	7,984	61,888	\$202,892,625

† Sugar refining statistics omitted for subsequent years because of the existence of but two factories and figures could not be given without showing individual operations.

CALIFORNIA'S PETROLEUM PRODUCTION

From the beginning of the industry to December 31, 1926, by fields. Compiled by the Statistical Department of the Chamber of Mines and Oil from data furnished by Federal and State Bureaus, the American Petroleum Institute, and the Independent Oil Producers' Agency

(Barrels of 42 U. S. gallons)

YEAR	Kern River	McKittrick	Midway	Sunset	Elk Hills	Coalinga	Lost Hills-Belridge	Santa Maria-Lompoc	Coyote	Montebello	Richfield
1895						14,119					
96						70,140					
97						134,000					
98						439,372					
99						525,433					
1900	826,775	10,000	4,235	12,500		571,233		94,188			
01	3,278,840	430,450	3,048	188,600		2,138,058		204,890			
02	8,988,046	619,296	3,048	167,558		5,097,853		700,450			
03	16,342,099	1,353,206	27,305	352,365		8,882,125		3,402,800			
04	17,226,240	1,856,225	910	390,425		8,401,105		4,798,411			
05	15,253,845	1,373,030	18,530	419,212		8,996,268		8,249,236			
06	12,825,166	680,756	11,800	307,550		10,725,795		8,095,350			
07	12,346,014	2,415,840	149,944	704,805		15,406,619		8,017,455			
08	13,803,579	3,076,300	434,578	1,463,510		18,646,570		7,607,830			
09	14,508,242	5,807,360	2,234,455	1,999,701		18,311,351	4,900	7,465,074			
10	14,776,435	5,471,613	11,174,207	9,218,904		19,546,122	168,410	6,801,966			
11	14,078,890	5,477,532	21,584,602	5,559,069		18,601,626	2,680,961	5,817,711	1,359,303		
12	12,446,445	5,094,465	25,948,980	5,590,824		13,546,139	3,274,553	5,303,080	3,777,359		
13	9,980,940	4,496,842	33,040,129	5,984,651		13,923,887	4,830,921	4,536,840	6,998,659		
14	8,034,974	3,820,857	37,479,228	12,546,615		14,361,493	4,318,550	4,422,410	6,610,508		
15	8,402,525	3,230,644	33,311,486	6,006,607		13,938,543	6,295,329	5,798,070	8,588,699		
16	8,495,610	3,252,544	29,487,812	6,768,658		16,281,066	5,420,079	7,143,750	789,635		
17	7,921,515	3,050,627	27,439,993	7,072,333		16,385,610	4,554,821	6,030,910	12,614,598		
18	7,563,025	2,810,848	26,133,048	5,880,885	281,019	15,464,198	4,139,767	5,928,060	10,240,359		
19	7,496,515	2,607,240	25,217,420	5,423,781	16,385,610	12,340,637	3,261,281	5,563,324	8,732,435		
20	6,715,680	2,056,101	24,172,350	4,613,965	18,085,425	12,340,637	3,261,281	5,563,324	11,124,585		
21	6,317,288	2,417,434	24,152,026	5,542,816	11,891,030	12,340,637	3,261,281	5,563,324	12,100,784		
22	6,816,134	2,191,702	27,803,281	5,542,816	11,891,030	12,340,637	3,261,281	5,563,324	8,732,435		
23	6,773,321	2,094,598	37,464,889	5,542,816	11,891,030	12,340,637	3,261,281	5,563,324	11,124,585		
24	5,901,877	2,091,971	36,923,402	5,542,816	11,891,030	12,340,637	3,261,281	5,563,324	11,124,585		
25	4,358,396	1,561,028	33,968,755	5,542,816	11,891,030	12,340,637	3,261,281	5,563,324	11,124,585		
26											
TOTAL	259,468,961	73,396,310	\$82,876,705	83,561,168	296,907,791	55,410,487	119,694,812	6,030,619	106,101,821	70,276,673	40,523,990

Figures for Midway and Sunset fields are combined after 1922.

Continued on page 273

CALIFORNIA'S PETROLEUM PRODUCTION

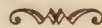
From the beginning of the industry to December 31, 1926, by fields. Compiled by the Statistical Department of the Chamber of Mines and Oil from data furnished by Federal and State Bureaus, the American Petroleum Institute, and the Independent Oil Producers' Agency.

(Barrels of 42 U. S. gallons)

Continued from page 272

YEAR	Whittier	Santa Fe Springs	Huntington Beach	Fullerton	Long Beach	Summerland	Newhall and Ventura Co.	Los Angeles Salt Lake	Torrance	Miscellaneous	Total
1895						16,904	474,624	749,695		4,116	1,245,339
96				12,000		39,792	298,866	992,668		2,155	1,257,780
97				60,000		130,136	631,135	1,064,158		4,000	1,911,369
98				217,599		132,217	763,871	1,126,000		3,000	2,249,088
99				511,550		208,570	743,898	1,052,036		1,500	2,677,875
1900				753,198		183,486	638,714	1,280,000		246,945	4,319,950
01				1,103,793		203,616	495,042	1,850,000			7,710,315
02				1,305,613		136,252	646,406	2,027,000			14,356,910
03				2,224,580		131,125	692,185	795,765		3,670	24,334,481
04				2,118,312		120,506	690,779	1,241,304			29,558,654
05				2,434,512		96,971	476,698	2,226,768		29,650	34,298,041
06				3,394,206		72,810	454,579	2,675,650		10,090	32,693,229
07				4,271,314		69,660	455,584	3,372,465		69,090	40,102,512
08				5,157,252		67,865	498,015	5,158,559		125,475	48,306,737
09				6,381,221		66,138	516,628	4,350,898		126,775	58,191,723
1910				7,081,165		74,725	632,575	3,729,618		36,970	77,697,568
11	747,439			7,881,097		71,255	661,785	3,225,661		61,350	83,744,044
12	690,133			6,189,541		65,713	859,885	3,073,427		45,870	90,074,439
13	636,789			6,493,100		62,406	1,022,052	2,896,946		27,375	97,867,184
14	758,163			5,661,808		53,000	968,421	2,564,475		103,623,695	97,867,184
15	1,014,667			5,076,582		56,775	1,122,035	1,721,455		89,566,779	97,867,184
16	1,156,752			4,750,582		56,570	1,186,407	1,501,799		91,822,362	97,867,184
17	1,046,467			4,463,281		54,613	1,386,518	1,397,781		97,267,832	97,867,184
18	1,001,048			4,350,684		53,680	1,792,465	1,341,415		101,657,870	97,867,184
19	842,184		38,116	5,317,997		53,680	2,122,449	1,311,264		101,657,870	97,867,184
20	735,376	208,216	2,618,812	6,012,839	75,588	54,155	2,375,479	1,344,926		105,721,186	97,867,184
21	717,729	11,032,955	11,169,393	4,531,974	18,560,395	46,539	3,015,877	1,253,287	190,785	24,035	114,849,924
22	648,210	79,781,275	37,355,642	4,064,661	66,810,561	25,862	3,702,464	1,193,016	3,128,694	20,338	139,626,876
23	763,211	26,399,653	17,553,576	4,181,789	60,122,002	53,201	4,020,169	901,435	17,526,123	307,430	263,728,895
24	742,676	18,969,538	13,881,474	4,481,445	46,173,575	48,531	9,263,472	731,912	7,996,744	230,063,117	230,063,117
25	746,125	17,446,709	19,664,814	6,987,469	57,931,564	46,865	2,204,381	675,950	10,354,905	39,339,085	230,147,342
26										47,114,693	224,117,013
TOTAL	12,241,978	153,838,338	100,567,761	116,139,806	225,673,855	2,640,310	51,080,731	60,952,096	44,442,620	95,668,378	2,551,464,621

Whitite details are given from the year 1895 onward, the totals represent production from the beginning of the industry.



PRODUCTION AND VALUE OF CRUDE OIL BY COUNTIES 1894-1925

Compiled from *California Mineral Production. Annual Bulletin, 1894-1925*
California State Mining Bureau

Year	FRESNO		KERN		LOS ANGELES		ORANGE		SAN LUIS OBISPO	
	Barrels	Dollars	Barrels	Dollars	Barrels	Dollars	Barrels	Dollars	Barrels	Dollar
1894			11,215	69,334	475,650	617,065				
1895			116	116	979,695	732,817				
1896	14,119	56,750	235	235	953,734	812,800				
1897	70,140	70,840			1,327,011	1,327,011	12,000	12,000		
1898	154,000	154,000	10,000	10,000	1,462,871	1,462,871	60,000	60,000		
1899	439,372	439,372	15,000	13,500	1,409,356	1,409,356	108,077	108,077		
1900	547,960	547,960	919,275	827,348	1,722,887	1,722,887	254,397	254,397		
1901	525,433	263,444	3,902,125	1,131,616	2,304,432	1,062,038	302,652	181,591		
1902	571,233	199,931	9,777,948	1,955,585	2,198,496	1,075,868	1,103,793	824,492		
1903	2,214,160	730,673	18,001,148	3,600,230	1,960,604	1,294,866	1,355,104	1,016,285		
1904	5,114,958	1,520,847	19,608,045	3,431,408	2,190,000	1,289,910	1,470,000	1,144,542		
1905	8,890,000	2,400,300	17,069,715	3,174,966	2,854,564	1,056,188	1,510,900	711,633		
1906	8,402,000	1,974,410	13,826,000	3,765,200	2,814,000	908,800	2,388,000	1,194,000		
1907	9,050,300	3,620,120	15,700,308	4,673,867	4,318,739	2,633,541	2,426,750	1,456,050	48,127	16,845
1908	10,725,389	5,898,964	18,777,871	9,388,935	6,244,347	4,082,052	3,376,689	2,532,517	10,000	5,000
1909	15,406,619	9,243,971	24,549,708	12,565,246	5,409,892	3,513,192	4,270,967	2,690,709	30,000	15,000
1910	18,651,470	9,277,241	40,641,159	17,825,212	5,127,266	3,185,433	5,044,001	3,177,721	22,310	11,555
1911	19,499,611	9,344,085	46,562,825	20,207,906	4,924,288	3,313,972	6,345,275	4,097,980	38,092	25,146
1912	19,510,932	8,487,255	51,448,067	21,762,532	4,484,590	2,798,384	6,704,421	4,478,553	2,129	1,469
1913	18,956,965	7,927,736	58,698,432	27,038,474	4,143,690	2,672,680	9,485,362	8,667,402		
1914	15,952,190	7,210,389	65,332,633	26,721,046	3,558,690	1,957,279	12,758,678	8,612,108		
1915	14,021,025	7,641,459	54,810,669	23,184,913	2,931,098	1,843,661	12,715,457	6,510,314		
1916	14,594,246	7,530,631	54,120,509	34,691,246	2,875,468	1,871,930	13,198,591	8,750,666	11,670	5,252
1917	16,259,797	13,414,333	53,065,066	47,387,104	4,669,583	5,491,430	14,680,801	14,724,843	74,143	68,656
1918	16,068,919	19,138,083	49,049,917	61,410,496	10,125,190	13,567,755	15,730,462	22,211,412	62,744	56,783
1919	16,091,037	20,805,711	47,734,035	64,440,947	15,076,633	20,805,754	14,458,722	26,893,223	31,656	39,922
1920	15,375,454	22,801,798	50,660,438	86,831,991	14,026,536	21,488,653	15,462,741	33,059,340	42,511	59,515
1921	12,161,565	18,643,679	57,434,945	97,639,407	12,395,605	25,795,254	22,929,466	45,996,509	30,725	43,691
1922	9,265,526	9,895,582	53,512,157	64,803,222	37,726,367	52,930,093	31,049,491	36,483,162	33,856	31,892
1923	5,061,542	3,593,695	45,952,794	37,629,300	158,665,019	154,063,733	46,474,921	40,897,930	32,983	19,793
1924	10,156,405	11,801,743	61,175,455	69,572,934	119,027,428	147,474,953	31,661,283	37,455,298	31,222	30,972
1925	7,773,665	8,503,390	58,852,742	84,255,094	121,214,551	173,215,593	12,734,420	46,384,673	29,590	32,164

Continued and totaled on page 275

APPENDIX

PRODUCTION AND VALUE OF CRUDE OIL BY COUNTIES 1894-1925

Compiled from *California Mineral Production, Annual Bulletin 1894-1925*

Continued from page 274

California State Mining Bureau

Year	SANTA BARBARA		SANTA CLARA		VENTURA		SAN MATEO		TOTALS	
	Barrels	Dollars	Barrels	Dollars	Barrels	Dollars	Barrels	Dollars	Barrels	Dollars
1894	1,800	1,800	3,500	8,500	290,913	367,822			783,078	1,064,521
1895	16,904	12,678	4,000	10,000	244,624	244,624			1,245,339	1,000,235
1896	39,792	35,813	900	1,145	248,000	272,800	1,000	1,250	1,257,780	1,180,793
1897	130,136	130,136	4,000	10,000	368,282	368,282			1,911,569	1,918,269
1898	132,217	112,459	3,000	6,000	427,000	571,000			2,249,088	2,376,420
1899	208,370	191,288	1,500	3,000	496,200	496,200			2,677,875	2,660,793
1900	183,486	165,138			443,000	398,700			4,329,950	4,152,928
1901	203,616	113,385			472,057	236,028			7,710,315	2,961,102
1902	230,440	181,313			475,000	455,000			14,356,910	4,692,189
1903	262,226	149,640	4,695	3,966	542,902	517,611			24,340,839	7,313,271
1904	790,000	445,560	42,000	13,860	518,000	465,682	3,000	6,000	29,736,003	8,317,809
1905	3,534,000	1,413,600	41,000	14,555	375,522	236,578			34,275,701	9,007,820
1906	4,876,000	1,237,250	7,000	2,800	311,000	155,500			36,624,000	9,238,020
1907	8,392,623	4,166,661	22,100	5,525	352,224	211,334			40,311,171	16,783,943
1908	8,847,589	4,423,794	35,400	17,700	289,625	217,219			48,306,910	26,566,181
1909	8,116,788	4,069,661	63,780	76,536	344,419	223,872			58,191,723	32,398,187
1910	7,682,355	3,856,222	36,660	36,660	492,147	319,898			77,697,568	37,689,545
1911	6,766,156	3,204,717	12,828	8,505	499,082	349,777			84,648,157	40,552,088
1912	6,862,719	3,747,045	14,092	8,292	662,300	584,811			89,689,250	41,868,344
1913	6,291,076	3,151,725	20,000	12,000	899,007	907,997			98,494,532	48,578,014
1914	4,325,787	1,989,862	10,000	5,300	943,929	991,125			102,881,907	47,487,109
1915	5,634,534	3,442,700	16,617	11,067	1,017,220	869,723			91,146,620	43,503,837
1916	4,502,206	3,574,752	16,368	10,901	943,499	985,956			90,262,557	57,421,334
1917	5,631,563	4,550,303	18,855	26,152	996,501	1,313,388			95,396,309	86,976,209
1918	7,334,104	9,057,618	20,499	34,848	1,339,342	1,982,226			99,731,177	127,459,221
1919	6,089,082	6,850,217	16,724	26,695	1,685,073	2,755,094	322	966	101,182,962	142,610,563
1920	5,803,583	9,140,643	16,095	23,901	1,989,681	4,988,130			103,377,361	178,394,937
1921	5,465,942	9,122,657	*14,286	27,909	2,167,326	5,869,119			112,599,860	203,138,225
1922	3,931,155	3,974,398	*15,985	26,288	2,933,685	5,236,628			138,468,222	173,381,265
1923	3,061,947	2,394,433	*15,685	23,341	3,610,794	4,109,084			262,875,690	242,731,309
1924	2,905,181	3,009,768	14,417	20,481	3,958,010	5,279,985	†4,120	6,740	228,933,471	274,652,874
1925	2,647,380	2,419,705	13,828	22,594	9,221,846	15,769,357	‡4,125	7,259	232,492,147	330,609,829

* Santa Clara and San Mateo Counties combined to conceal output of single operator in San Mateo County.

† San Bernardino and San Mateo Counties combined to conceal output of single operator in each county.

‡ San Bernardino and San Mateo Counties combined to conceal output of single operator in San Bernardino County.

MARCH OF INDUSTRY

PRODUCTION OF GOLD IN CALIFORNIA, 1848-1925

YEAR	Value	YEAR	Value
1848	\$245,301	1888	\$12,750,000
1849	10,151,360	1889	11,212,913
1850	41,273,106	1890	12,309,793
1851	75,938,232	1891	12,728,869
1852	81,294,700	1892	12,571,900
1853	67,613,487	1893	12,538,780
1854	69,433,931	1894	13,863,282
1855	55,485,395	1895	15,334,317
1856	57,509,411	1896	17,181,562
1857	43,628,172	1897	15,871,401
1858	46,591,140	1898	15,906,478
1859	45,846,599	1899	15,336,031
1860	44,095,163	1900	15,863,355
1861	41,884,995	1901	16,989,044
1862	38,854,668	1902	16,910,320
1863	23,501,736	1903	16,300,653
1864	24,071,423	1904	18,633,676
1865	17,930,858	1905	18,898,545
1866	17,123,867	1906	18,732,452
1867	18,265,452	1907	16,727,928
1868	17,555,867	1908	18,761,559
1869	18,229,044	1909	20,237,870
1870	17,458,133	1910	19,715,440
1871	17,477,885	1911	19,738,908
1872	15,482,194	1912	19,713,478
1873	15,019,210	1913	20,406,958
1874	17,264,836	1914	20,653,496
1875	16,876,009	1915	22,442,296
1876	15,610,723	1916	21,410,741
1877	16,501,268	1917	20,087,504
1878	18,839,141	1918	16,528,953
1879	19,626,654	1919	16,695,955
1880	20,030,761	1920	14,311,043
1881	19,223,155	1921	15,704,822
1882	17,146,416	1922	14,670,346
1883	24,316,873	1923	13,379,013
1884	13,600,000	1924	13,150,175
1885	12,661,044	1925	13,065,330
1886	14,716,506		
1887	13,588,614		
		TOTAL VALUE	\$1,789,298,515

APPENDIX

TOTAL MINERAL PRODUCTION OF CALIFORNIA BY YEARS, SINCE 1887

YEAR	Total value of all minerals	Gold, value	Petroleum, value
1887.....	\$19,785,868	\$13,588,614	\$1,357,144
1888.....	19,469,320	12,750,000	1,380,666
1889.....	16,681,731	11,212,913	368,048
1890.....	18,039,666	12,309,793	384,200
1891.....	18,872,413	12,728,869	401,264
1892.....	18,300,168	12,571,900	561,333
1893.....	18,811,261	12,422,811	608,092
1894.....	20,205,294	13,923,281	1,064,521
1895.....	22,844,663	15,334,317	1,000,235
1896.....	24,291,398	17,181,562	1,180,793
1897.....	25,142,441	15,871,401	1,918,269
1898.....	27,289,079	15,906,478	2,376,420
1899.....	29,313,460	15,336,031	2,660,793
1900.....	32,622,945	15,863,355	4,152,928
1901.....	34,355,981	16,989,044	2,961,102
1902.....	35,069,105	16,910,320	4,692,189
1903.....	37,759,040	16,471,264	7,313,271
1904.....	43,778,348	19,109,600	8,317,809
1905.....	43,069,227	19,197,043	9,007,820
1906.....	46,776,085	18,732,452	9,238,020
1907.....	55,697,949	16,727,928	16,783,943
1908.....	66,363,198	18,761,559	26,566,181
1909.....	82,972,209	20,237,870	32,398,187
1910.....	88,419,079	19,715,440	37,689,542
1911.....	87,497,879	19,738,908	40,552,088
1912.....	88,972,385	19,713,478	41,868,344
1913.....	98,644,639	20,406,958	48,578,014
1914.....	93,314,773	20,653,496	47,487,109
1915.....	96,663,369	22,442,296	43,503,837
1916.....	127,901,610	21,410,741	57,421,334
1917.....	161,202,962	20,087,504	86,976,209
1918.....	199,753,837	16,529,162	127,459,221
1919.....	195,830,002	16,695,955	142,610,563
1920.....	242,099,667	14,311,043	178,394,937
1921.....	268,157,472	15,704,822	203,138,225
1922.....	245,183,826	14,670,346	173,381,265
1923.....	344,024,678	13,379,013	242,731,309
1924.....	374,620,789	13,150,175	274,652,874
1925.....	434,519,660	13,065,330	330,609,829
TOTAL VALUES.....	\$3,904,915,476	\$641,313,072	\$2,213,747,928

California State Mining Bureau, *California Mineral Production for 1925*, S. F., 1926, Bulletin No. 97, p. 14.

MARCH OF INDUSTRY

TABLE SHOWING VALUE OF TAXABLE PROPERTY IN EACH COUNTY OF CALIFORNIA FOR SELECTED YEARS 1901 TO 1928. COMPILED FROM REPORTS OF STATE CONTROLLER

COUNTIES	1928	1927	1926	1925	1920	1915	1910	1905	1901
Alameda	\$529,083,095	\$469,981,274	\$433,045,954	\$398,907,567	\$302,649,037	\$262,432,711	\$200,206,102	\$164,386,981	\$ 89,771,005
Alpine	898,292	899,144	899,722	890,557	821,963	781,313	509,180	468,385	300,328
Amador	8,187,073	7,971,803	7,706,677	7,803,717	6,830,328	6,739,328	5,874,335	5,330,322	4,641,489
Butte	45,906,129	45,748,791	45,321,472	44,966,513	42,677,061	24,941,991	22,832,012	15,814,039	13,879,046
Calaveras	8,897,162	8,835,647	8,898,065	8,471,515	8,298,986	7,981,665	6,540,979	5,875,425	5,434,379
Colusa	27,056,954	27,254,483	27,109,925	26,815,147	24,668,074	16,036,728	13,373,570	16,772,572	11,812,546
Contra Costa	106,270,598	107,212,849	103,040,954	99,631,572	75,168,667	54,332,638	35,399,378	20,077,170	17,079,931
Del Norte	11,239,497	10,391,395	10,303,575	10,339,847	9,192,650	5,077,652	4,363,606	3,209,214	2,048,444
El Dorado	13,413,548	13,384,098	13,073,804	12,835,140	8,585,033	7,083,583	6,128,658	4,490,265	4,039,566
Fresno	205,013,930	205,198,111	198,657,868	198,413,940	169,478,324	96,803,387	65,264,422	34,804,216	30,770,729
Glenn	28,897,075	28,665,826	28,612,998	27,952,818	27,704,892	17,472,821	14,087,544	9,934,860	10,007,218
Humboldt	58,401,371	56,735,465	56,617,975	57,257,456	41,984,519	34,742,783	29,149,177	24,824,099	18,099,949
Imperial	54,248,738	54,776,203	53,747,610	52,223,716	80,786,593	29,121,521	12,148,180	2,469,054	1,885,336
Inyo	19,310,706	19,105,244	18,760,737	18,730,553	15,604,943	12,146,953	52,350,546	21,599,139	21,129,890
Kern	209,594,579	205,141,512	201,669,763	211,995,472	123,796,489	88,648,987	13,160,692	7,704,415	7,565,903
Kings	31,559,175	29,373,655	29,373,655	29,932,326	26,817,020	17,682,680	3,646,109	3,327,865	3,178,460
Lake	9,677,995	9,170,675	8,685,845	7,382,855	6,909,698	5,009,380	7,272,217	5,375,322	3,499,650
Lassen	19,156,118	18,697,383	18,548,138	17,805,368	12,095,851	862,441,180	531,400,559	226,130,339	103,328,904
Los Angeles	3,655,002,294	3,336,940,015	3,047,487,407	2,940,078,815	1,275,735,264	16,023,639	10,622,886	6,263,200	6,289,942
Madera	30,727,991	29,593,891	28,998,908	28,248,229	25,551,413	23,446,406	19,769,273	13,368,310	12,108,904
Marin	32,214,590	31,603,503	30,341,578	29,132,953	25,582,997	3,681,289	2,491,892	2,257,871	2,096,537
Mariposa	6,032,869	5,831,196	6,085,206	5,582,997	4,379,348	18,316,490	15,693,786	12,048,236	10,660,254
Mendocino	30,168,491	31,066,896	30,920,640	31,059,690	29,494,976	26,544,868	20,893,796	13,275,356	13,657,777
Merced	42,447,513	41,449,581	39,336,433	39,830,913	33,139,153	8,068,490	6,136,543	4,484,822	3,003,805
Modoc	9,156,035	8,507,533	8,311,280	8,140,949	3,492,512	1,911,797	1,349,690	1,174,334	1,137,276
Monro	6,429,227	6,524,017	5,909,729	6,049,540	40,449,052	34,572,343	28,352,856	17,372,365	18,016,456
Monterey	58,094,159	54,101,624	50,761,348	48,880,947	23,819,194	17,357,532	16,686,324	13,043,300	11,765,301
Napa	26,624,597	26,629,480	26,362,248	26,163,972	9,056,970	8,347,631	8,063,262	6,643,980	7,076,340
Nevada	9,489,480	9,632,988	9,683,613	9,658,005					

Continued and totaled on page 279

APPENDIX

TABLE SHOWING VALUE OF TAXABLE PROPERTY IN EACH COUNTY OF CALIFORNIA FOR SELECTED
Continued from page 278 YEARS 1901 TO 1918. COMPILED FROM REPORTS OF STATE CONTROLLER

COUNTIES	1918	1917	1916	1915	1910	1905	1901
Orange.....	\$199,559,653	\$190,247,009	\$177,730,314	\$55,266,628	\$30,597,532	\$13,468,885	\$11,245,544
Placer.....	29,734,114	27,988,880	25,415,588	14,947,936	13,275,928	7,433,885	9,097,657
Plumas.....	22,437,338	21,945,820	21,034,720	20,374,601	20,372,910	6,777,118	4,111,970
Riverside.....	72,154,164	68,653,643	65,666,943	63,155,539	26,925,831	13,141,286	12,248,709
Sacramento.....	174,177,903	171,546,769	158,086,066	155,360,518	61,646,032	35,609,770	34,346,017
San Benito.....	15,974,956	15,739,267	15,272,329	14,150,984	7,879,250	6,199,110	6,018,740
San Bernardino.....	123,527,300	119,886,794	115,823,908	81,750,985	49,895,897	16,418,867	16,416,149
San Diego.....	140,624,687	132,684,307	123,516,936	121,179,472	44,195,174	20,590,279	19,961,959
San Francisco.....	1,055,867,698	1,025,317,945	982,560,022	1,050,485,716	515,420,089	524,230,936	413,388,420
San Joaquin.....	125,429,911	122,919,943	121,623,705	122,330,481	46,589,111	34,172,028	32,023,372
San Luis Obispo.....	38,352,277	37,226,293	39,078,780	39,633,721	18,285,413	13,281,532	12,213,984
San Mateo.....	51,926,529	50,201,488	48,109,329	46,183,707	27,573,681	17,949,885	14,484,957
Santa Barbara.....	83,517,348	79,007,741	74,627,787	70,788,831	31,185,280	17,435,764	13,969,868
Santa Clara.....	138,447,550	129,813,207	126,507,637	124,103,301	73,144,152	55,283,625	51,920,963
Santa Cruz.....	27,977,033	27,848,035	26,854,793	26,314,415	17,817,571	12,456,525	11,222,967
Shasta.....	25,368,018	25,325,370	25,222,656	23,921,238	16,072,141	10,400,241	9,362,304
Sierra.....	3,245,837	3,339,760	3,202,043	3,256,377	2,429,947	1,955,755	1,529,604
Siskiyou.....	30,486,526	31,454,257	30,004,501	29,092,483	17,292,449	10,573,229	8,991,828
Solano.....	39,666,950	39,720,415	38,100,855	37,602,045	26,707,377	17,913,810	17,524,117
Sonoma.....	55,148,538	54,248,243	51,323,760	51,110,190	41,677,089	29,595,560	26,003,179
Stanislaus.....	65,295,300	64,976,157	63,311,554	62,109,779	30,082,637	12,656,020	12,037,410
Sutter.....	23,692,585	23,443,897	22,813,548	22,141,102	13,358,785	8,163,960	6,364,459
Tehama.....	23,061,979	23,088,343	23,023,536	20,807,359	16,039,723	10,908,185	10,910,679
Trinity.....	3,802,472	3,877,869	3,815,166	3,827,208	2,834,258	2,271,890	1,567,998
Tulare.....	93,100,528	92,276,982	89,898,736	88,988,736	52,682,367	37,445,140	15,568,519
Tuolumne.....	12,539,370	12,683,940	12,317,844	12,356,640	9,559,979	8,485,327	7,200,890
Ventura.....	98,911,831	94,751,159	76,889,752	63,246,876	45,773,961	25,516,650	8,754,284
Yolo.....	34,553,152	34,393,244	34,138,665	33,466,439	24,970,716	20,318,955	15,371,360
Yuba.....	21,387,765	21,091,893	20,214,480	20,257,344	10,510,887	7,821,519	5,464,434
TOTAL.....	8,123,208,593	7,647,025,607	7,164,457,974	7,035,742,630	3,311,446,744	1,554,202,986	1,241,705,803

MARCH OF INDUSTRY

PROPERTY VALUATIONS

Valuation of Real and Personal Property, and the Rate of Taxation (for State Purposes) on Each One Hundred Dollars, from the Organization of the State Government to the Year 1928, inclusive. (Table Revised and Corrected in 1910.)

YEAR	Total assessed value of property in California	Value of personal property including money	Percentage of personal property	State rate of taxation
1850	\$57,670,689	\$13,968,797	24.22	.50
1851	49,231,052	20,935,116	42.52	.65
1852	64,579,375	24,213,395	37.49	.65
1853	95,335,646	33,654,000	35.32	.60
1854	111,191,630	39,040,428	35.11	.60
1855	103,887,193	34,858,319	33.56	.60
1856	115,007,440	40,942,699	35.60	.70
1857	126,059,461	59,149,630	46.92	.70
1858	125,955,877	54,185,728	43.01	.60
1859	131,060,279	56,580,344	43.17	.60
1860	148,193,540	68,369,383	46.06	.60
1861	147,811,617	73,350,591	49.62	.60
1862	160,369,071	74,014,666	46.15	.77
1863	174,104,955	80,496,645	46.23	.92
1864	179,164,730	78,117,375	43.60	1.20
1865	183,534,312	79,782,436	43.47	1.15
1866	200,368,826	92,490,635	46.15	1.13
1867	212,205,339	100,105,600	47.17	1.13
1868	237,483,175	105,112,083	44.26	1.00
1869	260,563,879	104,723,592	40.19	.97
1870	277,538,134	108,001,588	38.90	.865
1871	267,868,126	86,074,230	32.13	.865
1872	637,232,823	219,942,323	34.51	.50
1873	528,747,043	118,425,520	22.20	.50
1874	611,495,197	210,779,127	34.46	.649
1875	618,083,315	199,243,292	32.07	.605
1876	595,073,177	140,431,866	23.60	.735
1877	586,953,022	128,780,824	21.77	.63
1878	584,578,036	118,390,451	20.23	.55
1879	549,142,610	112,325,850	20.45	.625
1880	666,399,985	174,514,906	26.18	.64
1881	659,835,762	160,058,309	24.24	.655
1882	608,555,960	134,048,617	22.02	.506
1883	765,729,430	167,338,644	21.85	.497
1884	821,078,767	166,394,997	20.26	.452
1885	859,512,384	172,760,681	20.09	.544
1886	817,445,729	152,889,567	18.70	.56
1887	956,740,805	165,663,387	17.31	.608
1888	1,107,952,700	173,273,458	10.63	.504
1889	1,111,550,979	170,661,836	15.35	.722
1890	1,101,137,290	169,489,475	15.39	.58
1891	1,242,300,434	190,163,597	15.30	.446
1892	1,275,678,822	186,579,990	14.62	.434
1893	1,216,380,398	173,509,311	14.26	.576
1894	1,404,347,291	162,641,812	13.50	.493
1895	1,132,512,903	157,050,570	13.87	.685
1896	1,264,973,043	187,676,729	14.84	.429
1897	1,089,373,316	152,449,506	13.99	.51
1898	1,132,230,221	158,694,274	14.01	.488
1899	1,193,961,761	128,138,436	18.27	.601
1900	1,217,648,863	228,664,981	18.78	.498
1901	1,241,359,555	236,208,276	19.03	.48
1902	1,290,238,964	251,112,343	19.46	.382
1903	1,597,944,240	312,220,698	19.54	.561
1904	1,545,698,785	282,409,057	18.27	.535
1905	1,624,023,172	281,852,033	17.35	.49
1906	1,594,231,577	270,632,329	16.97	.476
1907	1,879,950,692	336,156,302	17.35	.445
1908	1,990,256,945	329,131,342	16.54	.40
1909	2,439,566,433	366,841,396	15.04	.364
1910	2,372,944,301	334,294,790	14.09	.353

APPENDIX

PROPERTY VALUATIONS—(Continued)

Valuation of Real and Personal Property, and the Rate of Taxation (for State Purposes) on Each One Hundred Dollars, from the Organization of the State Government to the Year 1928, inclusive.

YEAR	Total assessed value of property in California	Value of personal property including money	Percentage of personal property	State rate of taxation
1911.....	\$2,602,344,933	\$ 393,093,875	15.10	.05
1912.....	2,919,855,033	441,353,450	15.11	.044
1913.....	3,114,821,281	542,178,904	17.41	.042
1914.....	3,232,981,478	543,809,923	16.82	.039
1915.....	3,314,492,798	578,775,844	17.46	None
1916.....	3,577,877,764	765,607,899	21.40	None
1917.....	3,717,087,414	845,366,375	22.74	None
1918.....	3,806,257,623	898,537,594	23.60	None
1919.....	4,069,449,770	1,009,278,448	24.80	None
1920.....	4,551,583,324	1,184,286,428	26.02	None
1921.....	4,921,786,485	1,271,185,663	25.83	None
1922.....	5,135,925,963	1,247,706,973	24.29	None
1923.....	5,716,785,815	1,445,219,741	25.28	None
1924.....	6,657,797,880	1,049,939,540	15.77	None
1925.....	7,035,742,630	954,137,990	-----	None
1926.....	7,164,457,974	913,421,427	-----	None
1927.....	7,647,025,607	990,326,200	-----	None
1928.....	8,123,208,593	1,031,982,067	-----	None

Biennial Reports of the State Controller.

Explanation.—The excessive increase in personal property for 1913 over 1912 is due to Los Angeles, San Francisco and other counties assessing franchises as personal property and Kern County switching approximately \$18,000,000 on oil wells from real estate and improvements to personal property. In 1914, Kern County returned the oil well assessments to the real estate and improvements column on her rolls.



NATIONAL BANKS IN CALIFORNIA (Capital, Deposits and Assets in Thousands of Dollars)

YEAR	Number of Banks	Capital	Deposits	Total Assets
1871	1	\$1,000	\$199	\$1,517
1872	3	2,800	3,144	8,068
1873	5	3,200	3,193	9,591
1874	6	3,500	5,406	12,293
1875	9	4,680	3,654	11,648
1876	9	4,700	2,499	9,403
1877	9	4,300	2,983	9,482
1878	9	4,300	3,403	10,070
1879	8	3,550	2,870	8,721
1880	10	3,150	3,873	9,681
1881	11	3,300	6,165	12,794
1882	11	3,300	7,434	13,992
1883	15	3,550	8,124	14,782
1884	15	3,550	6,531	12,840
1885	17	3,845	6,710	13,639
1886	24	5,385	11,215	20,465
1887	33	6,870	22,136	34,609
1888	38	8,175	18,074	32,791
1889	37	8,250	17,154	31,678
1890	37	8,475	18,236	33,410
1891	36	8,425	18,608	34,881
1892	36	8,175	16,714	31,987
1893	35	8,125	12,175	26,652
1894	34	7,775	14,684	29,031
1895	31	7,525	16,361	31,388
1896	31	7,525	16,181	31,318
1897	32	7,560	18,912	34,813
1898	34	10,825	28,977	51,484
1899	35	10,825	33,138	59,356
1900	38	10,998	35,195	64,417
1901	44	11,620	43,898	77,466
1902	49	12,180	53,603	92,542
1903	61	16,030	69,941	122,432
1904	75	17,963	70,567	135,340
1905	95	23,065	92,111	181,699
1906	115	25,265	130,103	254,243
1907	128	29,797	129,192	261,318
1908	143	33,795	127,567	262,217
1909	159	37,484	155,692	312,167
1910	187	48,803	202,533	407,090
1911	204	52,507	219,863	441,626
1912	231	54,521	256,169	500,466
1913	255	56,818	252,666	489,886
1914	262	57,908	272,150	508,754
1915	266	58,193	287,980	535,821
1916	263	58,488	299,994	645,944
1917	270	59,526	439,313	751,979
1918	273	60,066	449,789	813,454
1919	284	62,976	591,096	1,005,914
1920	305	66,005	660,926	1,092,956
1921	305	66,535	704,423	954,102
1922	296	65,125	616,896	956,900
1923	270	63,263	664,725	1,026,813
1924	270	60,252	731,618	928,932
1925	268	62,935	695,245	1,005,903
1926	264	64,355	647,994	1,043,878

APPENDIX

STATE BANKS IN CALIFORNIA

(Resources in Thousands of Dollars)

YEAR	Number of Banks	Resources
1878	84	\$ 151,932
1879	83	126,155
1880	78	119,576
1881	76	128,088
1882	78	130,344
1883	84	140,044
1884	92	149,875
1885	94	141,458
1886	96	154,120
1887	112	178,949
1888	133	192,241
1889	150	204,630
1890	168	220,484
1891	189	244,547
1892	215	266,742
1893	233	275,874
1894	231	264,733
1895	230	275,505
1896	231	270,234
1897	229	214,381
1898	231	277,478
1899	229	297,427
1900	231	320,368
1901	236	351,195
1902	252	422,247
1903	278	443,581
1904	332	468,226
1905	385	510,944
1906	425	611,115
1907	480	630,285
1908	490	535,171
1909	486	574,877
*1910	491	568,015
1911	502	608,858
1912	519	666,999
1913	548	705,871
1914	473	745,222
1915	468	763,685
1916	460	817,744
1917	448	929,224
1918	430	1,021,510
1919	425	1,132,110
1920	420	1,402,360
1921	423	1,496,036
1922	429	1,657,940
1923	429	1,986,290
1924	410	2,229,319
1925	394	2,455,798
1926	357	2,662,588
1927	304	2,055,160

*The figures in this table are from Armstrong and Dunn up to 1909, from 1910 on they are from the Eighteenth Digest of the Superintendent of Banks.



TABLE SHOWING RELATIVE RANK ACCORDING TO PAID-UP CAPITAL OF ALL CALIFORNIA BANKS WITH A PAID-UP CAPITAL OF OVER \$2,000,000.

BANK	Paid-Up Capital	Surplus and Profits	Deposits
Bank of Italy National Trust and Savings Association. (S. F.)	\$50,000,000	\$54,759,000	\$666,944,200
Los Angeles First National Trust and Savings Bank. (L. A.)	13,750,000	17,146,450	288,650,390
Security Trust and Savings Bank. (L. A.)	12,000,000	6,429,590	252,918,040
American Trust Co. (S. F.)	10,000,000	10,442,270	257,403,980
Wells Fargo Bank and Union Trust Co. (S. F.)	9,000,000	7,408,330	123,926,660
The Bank of California. (S. F.)	8,500,000	9,069,100	85,731,200
United Security Bank and Trust Co. (S. F.)	8,100,000	9,216,160	146,882,750
Anglo and London Paris National Bank. (S. F.)	7,500,000	4,897,130	116,080,260
Crocker First National Bank of San Francisco. (S. F.)	6,000,000	3,826,280	65,150,450
Citizens National Trust and Savings Bank of Los Angeles. (L. A.)	4,000,000	7,136,830	103,512,460
Merchants National Trust and Savings Bank. (L. A.)	4,000,000	5,475,250	137,556,390
California Bank. (L. A.)	4,000,000	3,273,940	95,336,400
Farmers and Merchants National Bank. (L. A.)	3,000,000	4,764,220	53,608,010

From Rand McNally's Bankers' Directory, July 1, 1928

CHANGES IN TOTAL ROLL, NUMBER OF BUILDING AND LOAN ASSOCIATIONS REPORTING AND GROSS ASSETS SINCE ORGANIZATION OF BUILDING AND LOAN COMMISSION

The following table shows the changes in assets, total roll and number of associations reporting since May 31, 1894, the date of the first report, to June 30, 1927

YEAR	Total associations	Associations reporting	Assets	Increase
1894	146	137	\$20,820,082.18	
1895	153	144	21,500,520.01	\$680,437.83
1896	153	147	21,470,309.86	30,210.15
1897	155	151	21,791,928.81	321,618.95
1898	157	148	20,721,226.72	*1,070,702.09
1899	159	151	20,285,454.24	*435,772.48
1900	157	148	18,935,883.76	*1,349,570.48
1901	153	138	17,881,576.70	*1,054,307.06
1902	151	138	18,190,867.58	309,290.88
1903	146	133	19,865,852.02	1,674,984.44
1904	141	126	21,306,042.32	1,440,190.30
1905	142	117	22,586,871.87	1,280,829.55
1906	131	106	19,228,938.88	*3,357,932.99
1907	125	107	19,522,896.86	293,957.98
1908	120	107	19,635,667.94	112,771.08
1909	120	105	20,228,116.40	592,448.46
1910	113	107	21,255,176.49	1,027,060.09
1911	107	96	23,340,012.38	2,084,835.89
1912	107	91	24,866,571.97	1,526,559.59
1913	98	93	28,316,021.97	3,449,450.00
1914	97	92	29,515,762.57	1,199,740.60
1915	97	89	30,441,084.05	925,321.46
1916	96	89	32,794,018.18	2,352,934.15
1917	91	86	35,928,446.84	3,134,428.66
1918	90	86	37,120,998.91	1,192,552.07
1919	90	85	38,374,331.91	1,253,333.00
1920	99	87	47,851,294.44	9,476,962.53
1921	100	96	56,496,548.56	8,645,254.12
1922	112	102	64,732,760.05	9,236,211.49
1923	132	115	85,270,458.70	20,537,698.65
1924	147	138	108,687,142.86	23,416,684.16
1925	162	152	140,657,891.10	31,970,748.24
1926	187	176	190,106,988.03	49,449,096.93
1927	202	191	241,796,747.10	51,689,759.07

*Decrease.

34th Annual Report of the Building and Loan Associations.

APPENDIX

VALUES OF EXPORT AND IMPORT TRADE THROUGH CALIFORNIA PORTS—1860-1927

Year	SAN FRANCISCO		SAN DIEGO*		HUMBOLDT		LOS ANGELES	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1860	\$4,867,490	\$1,367,016	-----	-----	-----	-----	-----	-----
1865	9,987,516	15,802,226	-----	-----	-----	-----	-----	-----
1870	14,091,781	15,982,549	-----	-----	-----	-----	-----	-----
1875	24,070,157	24,677,243	-----	-----	-----	-----	-----	-----
1880	33,358,939	35,221,751	-----	-----	-----	-----	-----	-----
1885	38,115,624	35,040,350	-----	-----	-----	-----	-----	-----
1890	36,876,091	48,751,223	\$264,644	\$437,665	\$108,051	\$1,549	\$220	\$169,955
1895	24,873,148	36,269,637	45,225	346,155	106,594	2,110	6,696	657,671
1900	40,368,288	47,869,628	2,739,174	559,585	253,616	1,528	-----	1,011,090
1905	49,924,026	46,675,545	320,533	275,631	140,441	1,821	291	810,000
1910	31,180,760	49,350,643	928,994	741,916	1,031,182	6,317	135,911	1,942,647
1915	81,500,979	76,068,028	-----	-----	-----	-----	2,512,355	4,716,390
1916	94,558,987	113,645,919	-----	-----	-----	-----	3,268,105	4,175,260
1917	142,890,207	144,027,410	-----	-----	-----	-----	5,825,669	6,532,381
1918	214,694,501	245,519,466	-----	-----	-----	-----	6,288,978	9,417,371
1919	240,517,739	238,027,061	-----	-----	-----	-----	15,923,473	15,609,610
1920	225,827,836	211,928,222	5,243,344	7,915,308	-----	-----	20,881,790	15,552,723
1921	129,111,000	97,129,000	-----	-----	-----	-----	21,184,000	19,684,000
1922	145,099,000	170,815,000	-----	-----	-----	-----	23,553,000	24,942,000
1923	160,433,000	166,685,000	-----	-----	-----	-----	39,635,000	32,517,000
1924	173,442,000	146,335,000	-----	-----	-----	-----	73,477,000	40,591,000
1925	183,292,000	196,537,000	-----	-----	-----	-----	18,944,000	44,453,000
1926	186,773,000	210,139,000	-----	-----	-----	-----	103,645,000	49,571,000
1927	174,555,000	199,999,000	-----	-----	-----	-----	120,573,000	47,140,000

*Except for years shown San Diego is included with Los Angeles under the caption, "Southern California."
From U. S. Statistical Abstracts.

CARGO TONNAGE OF WATER-BORNE IMPORTS AND EXPORTS OF CALIFORNIA PORTS, 1922-1926

	1922		1923		1924		1925		1926	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
Eureka.....	2,002	48,379	2,000	84,293	2,046	41,525	2,200	46,674	-----	52,056
Los Angeles.....	219,213	775,904	493,958	2,294,066	1,009,169	3,206,821	393,258	3,231,141	451,832	4,435,046
Richmond.....	4,320	51,658	-----	18,660	-----	-----	-----	-----	-----	-----
San Francisco.....	957,830	1,548,238	948,318	2,064,539	931,920	1,871,921	958,012	1,860,265	1,015,927	2,097,250
Port S. Luis.....	-----	216,870	-----	745,639	-----	473,386	-----	240,030	332	358,029
San Diego.....	-----	-----	-----	-----	66,511	13,584	23,994	8,636	13,877	6,530

From U. S. Statistical Abstracts.

MARCH OF INDUSTRY

ORDINARY LIFE INSURANCE COMPANIES

YEAR	Premiums received	Losses and claims paid
1898	\$4,491,699.78	\$2,471,974.78
1899	4,925,429.09	2,473,543.38
1900	5,683,412.06	2,430,650.33
1901	6,242,443.41	2,975,847.61
1902	7,480,488.89	2,887,479.63
1903	8,866,405.31	2,881,932.78
1904	10,166,656.76	3,121,817.19
1905	10,550,503.86	3,400,490.37
1906	10,643,952.00	4,081,162.73
1907	11,017,207.20	4,995,417.25
1908	11,658,903.26	4,343,935.04
1909	12,557,869.31	4,404,398.96
1910	13,501,003.98	4,771,862.70
1911	14,811,167.84	5,719,644.03
1912	16,718,297.79	6,449,765.86
1913	18,454,772.20	6,914,709.28
1914	19,831,311.69	6,913,169.58
1915	20,789,182.26	8,668,950.09
1916	22,068,036.85	8,721,793.31
1917	24,864,397.88	8,621,962.70
1918	26,821,052.83	12,687,999.29
1919	32,824,685.03	13,328,968.22
1920	40,426,814.43	12,878,604.62
1921	47,220,904.98	13,869,036.49
1922	54,494,907.31	17,179,099.35
1923	65,192,349.32	19,435,167.11
1924	75,920,571.93	20,496,237.44
1925	85,535,408.66	20,107,416.61
1926	97,374,895.25	22,669,569.52
1927	109,131,725.81	23,679,224.13
TOTALS	\$890,266,456.97	\$273,681,830.32

INDUSTRIAL LIFE INSURANCE BUSINESS

YEAR	Premiums received	Losses and claims paid
1918	\$3,720,752.72	\$1,262,566.65
1919	4,108,342.74	1,141,361.31
1920	5,094,653.77	1,158,896.55
1921	6,011,109.19	1,223,291.20
1922	6,954,430.87	1,575,407.57
1923	8,813,649.79	1,869,497.15
1924	10,683,599.51	2,057,563.31
1925	12,255,601.84	2,236,251.10
1926	15,202,092.18	2,575,693.49
1927	17,634,742.10	2,843,945.39
TOTALS	\$90,476,974.71	\$17,944,473.72

APPENDIX

STOCK FIRE INSURANCE COMPANIES

YEAR	Premiums received	Losses paid
1898	\$6,657,887.55	\$3,578,294.69
1899	5,545,260.51	2,882,973.60
1900	5,795,506.75	2,430,242.35
1901	7,522,401.88	2,344,581.05
1902	7,339,984.39	2,655,301.58
1903	8,288,354.90	4,342,785.60
1904	10,104,033.49	3,830,252.77
1905	10,353,808.04	3,883,540.20
1906	13,368,350.87	146,306,376.92
1907	16,242,105.95	7,008,035.97
1908	14,442,623.40	5,345,988.35
1909	15,094,210.60	5,795,279.57
1910	15,900,524.11	6,013,426.48
1911	16,154,903.01	4,604,219.19
1912	16,258,040.76	5,569,008.97
1913	15,897,255.09	7,101,298.64
1914	16,564,373.64	6,754,603.76
1915	16,451,546.33	7,910,764.97
1916	17,131,070.02	5,758,367.16
1917	19,556,174.84	6,359,352.98
1918	22,180,086.13	7,432,077.98
1919	26,707,383.84	9,118,108.18
1920	33,600,602.36	11,848,596.15
1921	30,139,847.29	14,352,370.82
1922	33,092,431.38	12,525,656.48
1923	40,445,968.92	19,010,819.06
1924	40,473,574.32	20,464,586.14
1925	42,223,423.90	17,617,435.18
1926	44,901,736.10	23,332,317.25
1927	44,240,796.70	16,482,575.42
TOTALS	\$612,674,267.07	\$392,659,237.46

CALIFORNIA

■ AREAS WITH TOPOGRAPHY
FAVORABLE TO AGRICULTURE
DEVELOPMENT

▨ PINE REGION

▩ REDWOOD REGION

▤ BRUSH AREAS

STATE CHAMBER OF COMMERCE



OREGON

MAP
OF
CALIFORNIA

SHOWING
GENERAL CLASSIFICATION OF LAND
WITH REGARD TO OIL POSSIBILITIES

BY
LAWRENCE VANDER LECK
JULY 1921

CALIFORNIA STATE MINING BUREAU
FLETCHER HAMILTON, STATE MINERALOGIST

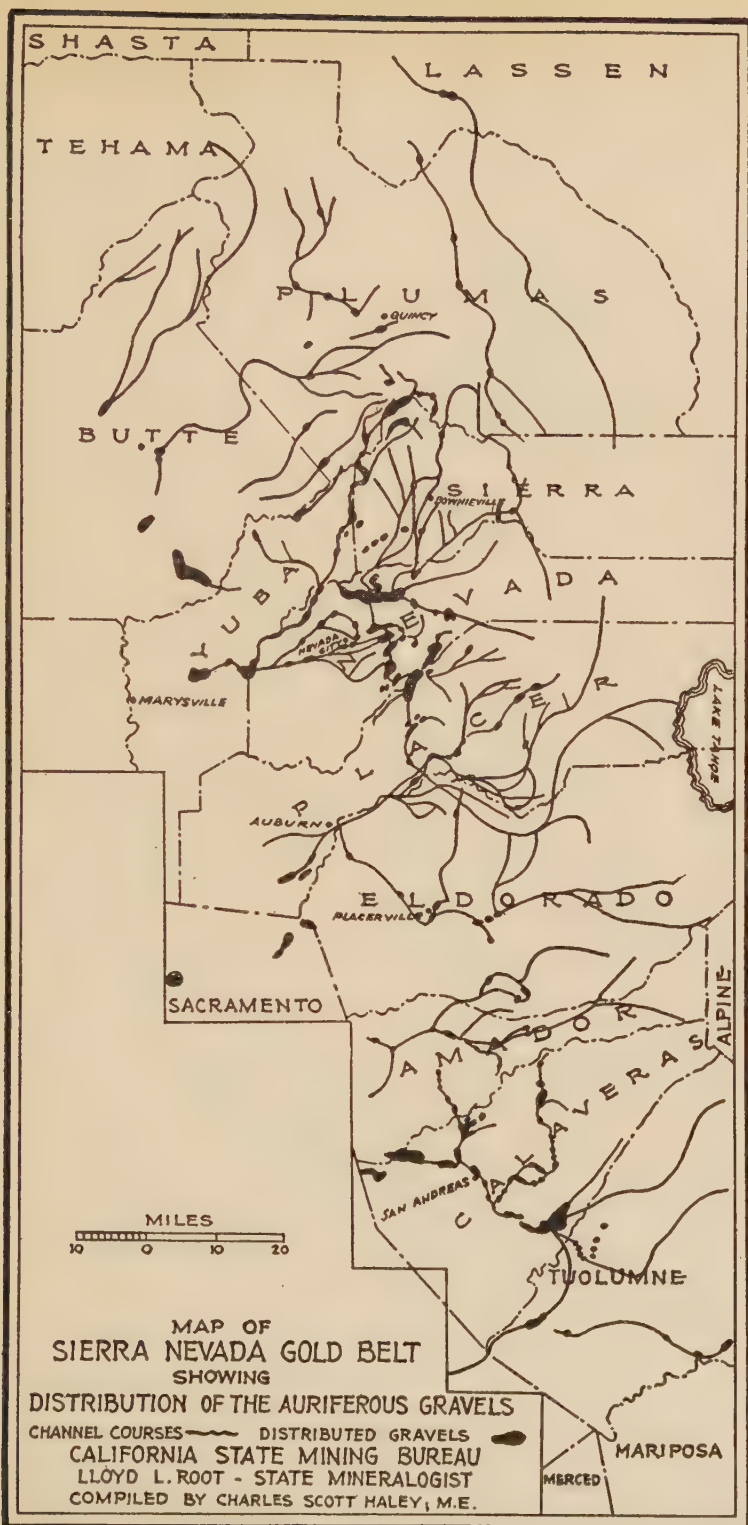
MILES
0 50 100



Land that has been shown by actual drilling to be commercially productive, together with those adjoining areas on which it is practically certain that commercial wells can be obtained.

Includes all land on which there is the slightest indication of petroleum but which remains unproven to date. In the San Joaquin Valley, the coastal plain of Los Angeles and Orange Counties, and the mouth of the Salinas Valley; also includes the area in which there is a possibility that buried productive fields may be found.

MEXICO



OREGON



GRAPES

Showing important growing districts for California
GRAPES

1926

AGRICULTURAL DEPARTMENT
LOS ANGELES CHAMBER OF COMMERCE



OREGON

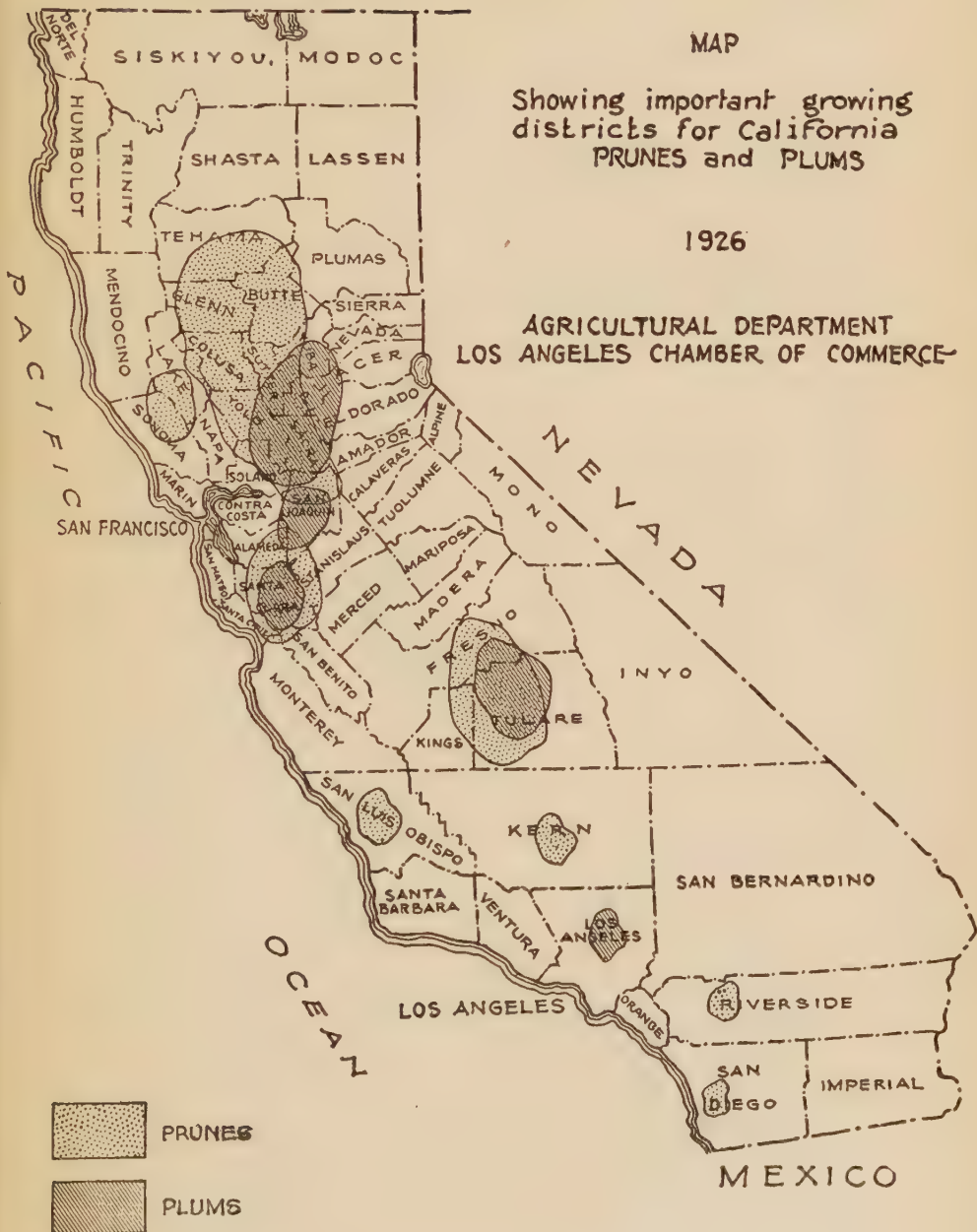
PRUNES and PLUMS

MAP

Showing important growing districts for California
PRUNES and PLUMS

1926

AGRICULTURAL DEPARTMENT
LOS ANGELES CHAMBER OF COMMERCE



OREGON

FIGS - CHERRIES

MAP

Showing important growing
districts for California
FIGS and CHERRIES

1926

AGRICULTURAL DEPARTMENT
LOS ANGELES CHAMBER OF COMMERCE



OREGON

APPLES and PEARS

MAP

Showing important growing districts for California
APPLES and PEARS

1926

AGRICULTURAL DEPARTMENT
LOS ANGELES CHAMBER OF COMMERCE



OREGON

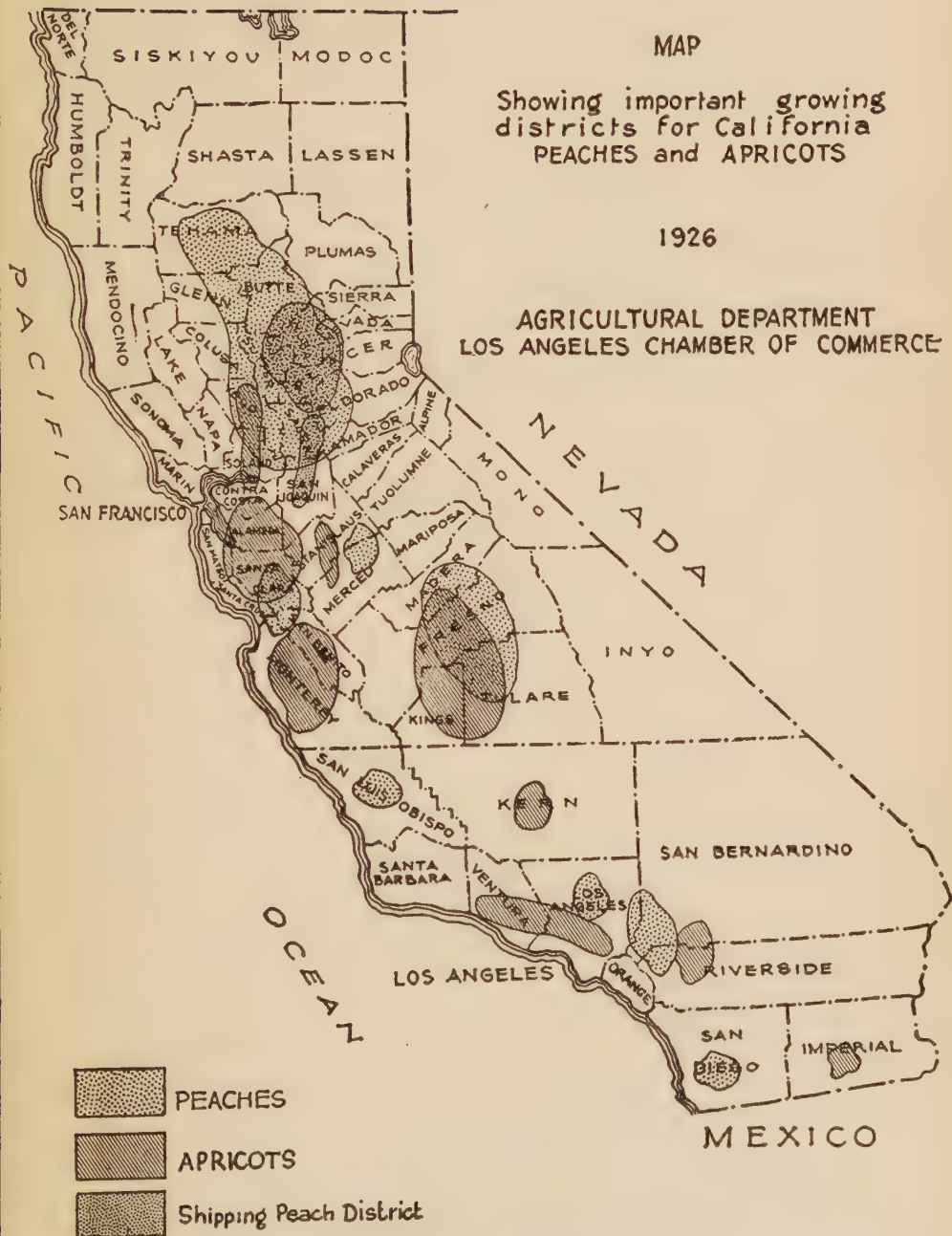
PEACHES - APRICOTS

MAP

Showing important growing
districts for California
PEACHES and APRICOTS

1926

AGRICULTURAL DEPARTMENT
LOS ANGELES CHAMBER OF COMMERCE



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CITRUS FRUITS
MAP SHOWING
PRINCIPAL GROWING DISTRICTS
FOR CALIFORNIA CITRUS FRUITS
1926

NOTE: COACHELLA AND IMPERIAL VALLEYS
PRODUCE GRAPE FRUIT ONLY; KERN COUNTY ONLY
ORANGES; COLUSA COUNTY PRINCIPALLY LEMONS; &
BUTTE COUNTY ORANGES. OTHERS SHOWN GROW
ALL CITRUS FRUITS.

AGRICULTURAL DEPARTMENT
LOS ANGELES CHAMBER OF COMMERCE



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